ORDER NO. KMS0101535C1

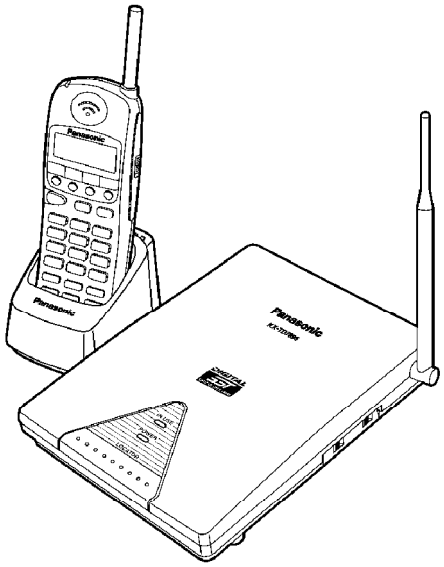
F5

# Service Manual

## WIRELESS PHONE

## KX-TD7895

## (for U.S.A.)



## SPECIFICATIONS

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| | Base unit | Handset |
|---|---|---|
| Power Source: | AC Adaptor (PQLV1) | Rechargeable Ni-MH battery |
| Receiving Frequency: | 26 channels between 906.0 ~ 924.750 MHz | 26 channels between 906.0 ~ 924.750 MHz |
| Receiving Method: | Double Super Heterodyne | Double Super Heterodyne |
| Transmitting Frequency: | 26 channels between 906.0 ~ 924.750 MHz | 26 channels between 906.0 ~ 924.750 MHz |
| Oscillation Method: | PLL Synthesizer | PLL Synthesizer |
| Spread Spectrum Method: | Direct Sequence | Direct Sequence |
| Tolerance of Osc Frequency: | 24MHz ± 720kHz | 24MHz ± 720kHz |
| Modulation Method: | N/A (FSK/SS) | N/A (FSK/SS) |
| ID Code: | 20bit written in ROM | 20bit written in ROM |
| Dial Mode: | – | Tone (DTMF) / Pulse |
| Redial: | – | Up to 30 digits (SLT Mode) |
| Power Consumption: | – | 5hours Talk, 168hours (1 week) on Standby |
| Dimension (HxWxD): | 1 3/8 " X 4 23/32" X 7 17/32" (35(H) X 120(W) X 192(D)mm) | 7 9/32" X 2 1/16" X 1 3/16" (185(H) X 52(W) X 30(D)mm) |
| Weight: | 310g | 185g |

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**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

# 1. CAUTION

**Note:**
**When you mention the serial number, write down all 11 digits.**
**The serial number may be found the label affixed to the bottom of the unit.**

# 2. FOR SERVICE TECHNICIANS

**ICs and LSIs are vulnerable to static electricity.**
**When replacing, the following precautions will help prevent recurring malfunctions.**

**1. Cover the plastic parts boxes with aluminum foil.**

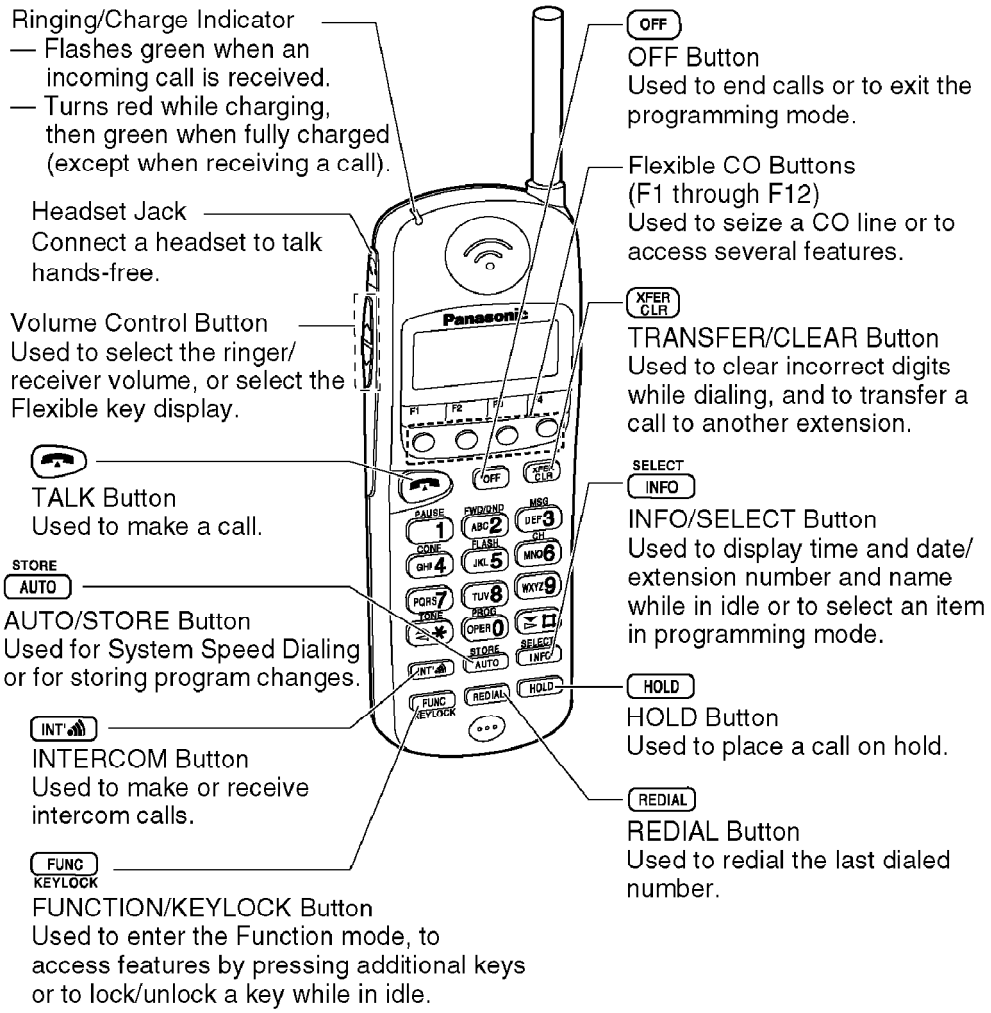
**2. Ground the soldering irons.**

**3. Use a conductive mat on the work table.**

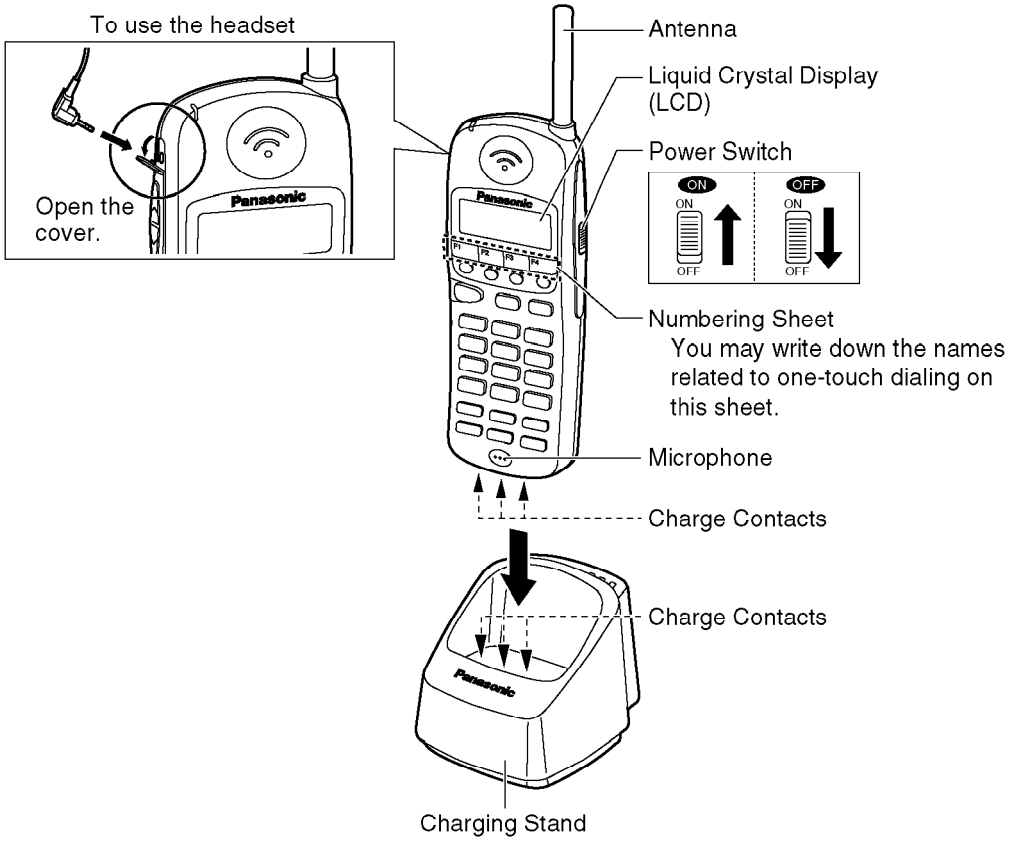
**4. Do not grasp IC or LSI pins with bare fingers.**

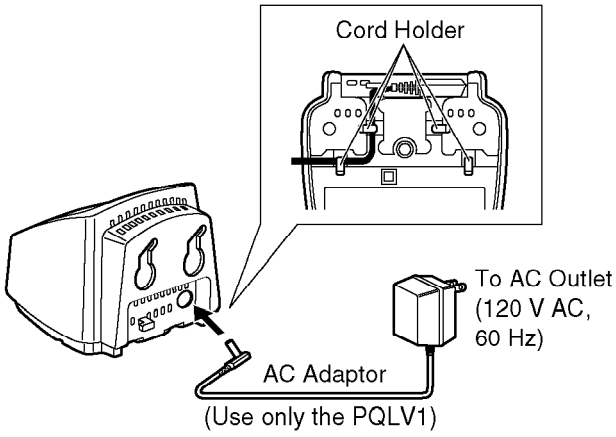
# 3. LOCATION OF CONTROLS AND CONNECTION

## 3.1. HANDSET

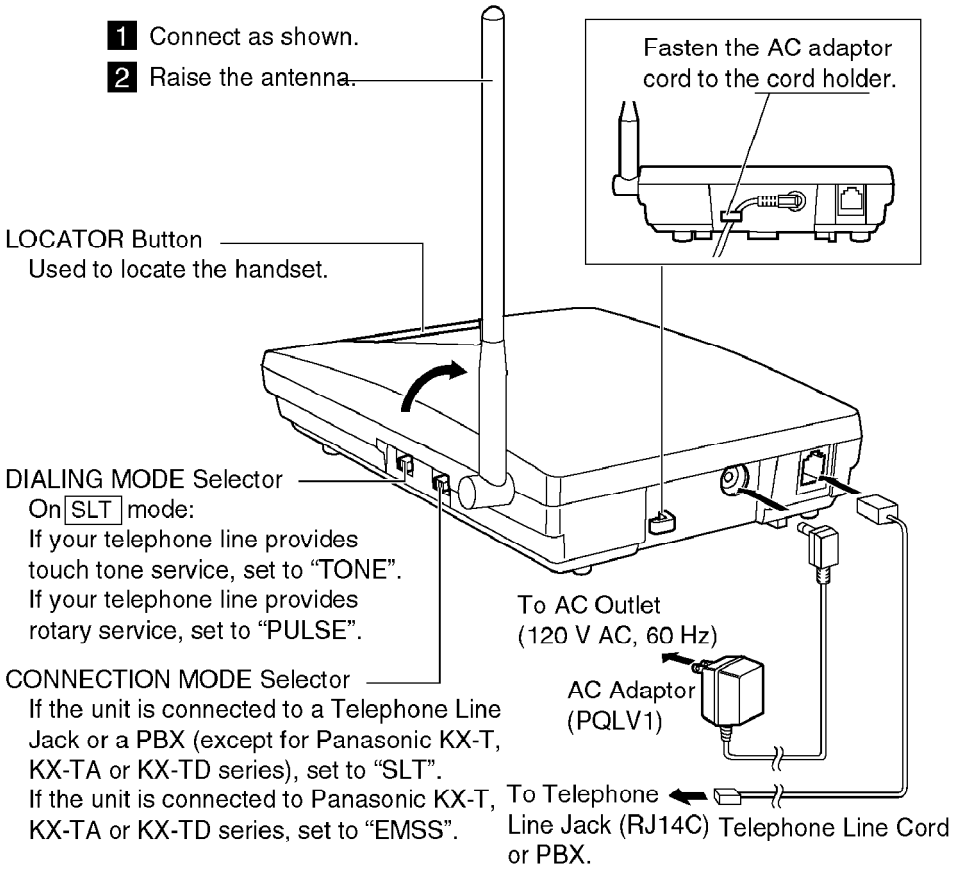

Ringing/Charge Indicator
— Flashes green when an incoming call is received.
— Turns red while charging, then green when fully charged (except when receiving a call).
Headset Jack
Connect a headset to talk hands-free.
Volume Control Button
Used to select the ringer/ receiver volume, or select the Flexible key display.
TALK Button
Used to make a call.
STORE
AUTO
AUTO/STORE Button
Used for System Speed Dialing or for storing program changes.
INT'
INTERCOM Button
Used to make or receive intercom calls.
FUNC
KEYLOCK
FUNCTION/KEYLOCK Button
Used to enter the Function mode, to access features by pressing additional keys or to lock/unlock a key while in idle.
OFF
OFF Button
Used to end calls or to exit the programming mode.
Flexible CO Buttons
(F1 through F12)
Used to seize a CO line or to access several features.
XFER
CLR
TRANSFER/CLEAR Button
Used to clear incorrect digits while dialing, and to transfer a call to another extension.
SELECT
INFO
INFO/SELECT Button
Used to display time and date/ extension number and name while in idle or to select an item in programming mode.
HOLD
HOLD Button
Used to place a call on hold.
REDIAL
REDIAL Button
Used to redial the last dialed number.

## 3.2. CONNECTIONS OF HANDSET


To use the headset
Open the cover.
Antenna
Liquid Crystal Display (LCD)
Power Switch
ON
OFF
Numbering Sheet
You may write down the names related to one-touch dialing on this sheet.
Microphone
Charge Contacts
Charge Contacts
Charging Stand


Cord Holder
To AC Outlet (120 V AC, 60 Hz)
AC Adaptor
(Use only the PQLV1)

## 3.3. BASE UNIT


1 Connect as shown.
2 Raise the antenna.
Fasten the AC adaptor cord to the cord holder.
LOCATOR Button
Used to locate the handset.
DIALING MODE Selector
On SLT mode:
If your telephone line provides touch tone service, set to "TONE".
If your telephone line provides rotary service, set to "PULSE".
CONNECTION MODE Selector
If the unit is connected to a Telephone Line Jack or a PBX (except for Panasonic KX-T, KX-TA or KX-TD series), set to "SLT".
If the unit is connected to Panasonic KX-T, KX-TA or KX-TD series, set to "EMSS".
To AC Outlet
(120 V AC, 60 Hz)
AC Adaptor
(PQLV1)
To Telephone Line Jack (RJ14C)
Telephone Line Cord
or PBX.

THE AC OUTLET POWER SOCKET SHOULD BE LOCATED NEAR THIS EQUIPMENT AND BE EASILY ACCESSIBLE.

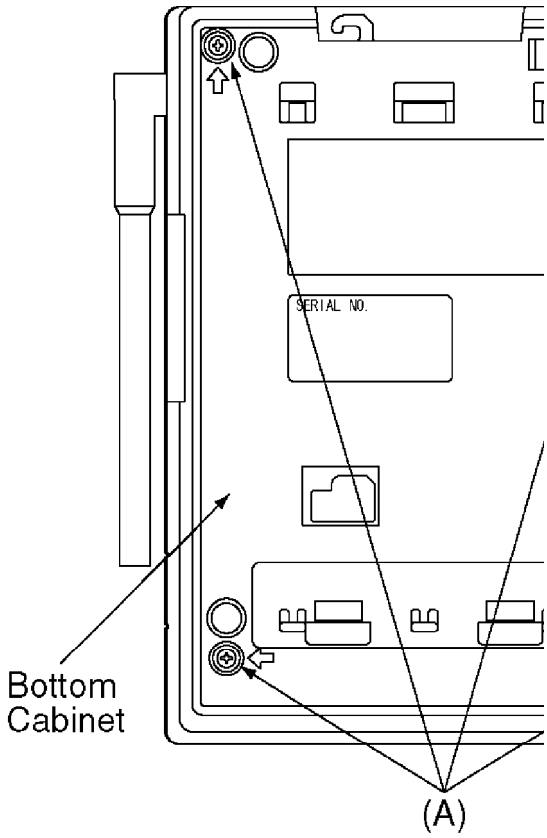
NOTE:

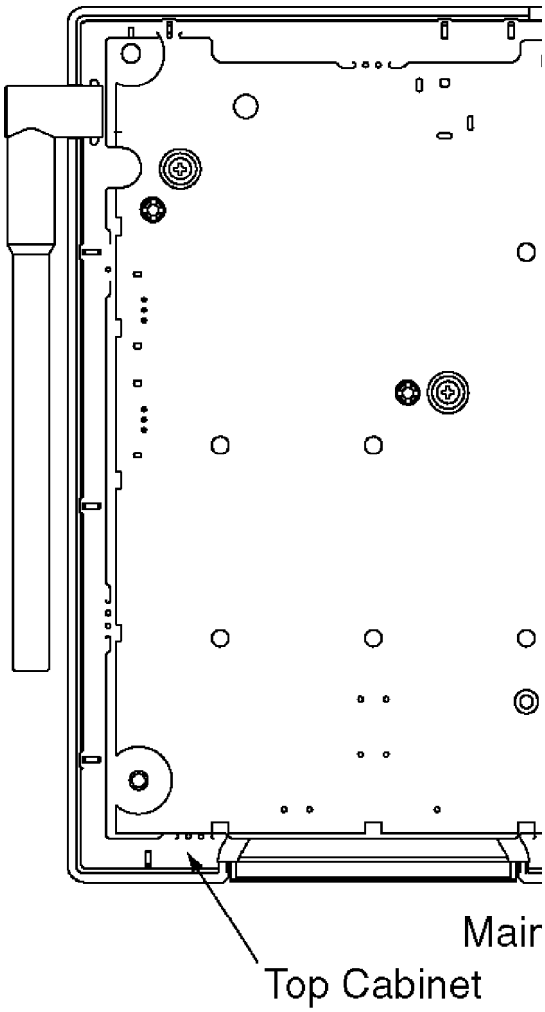
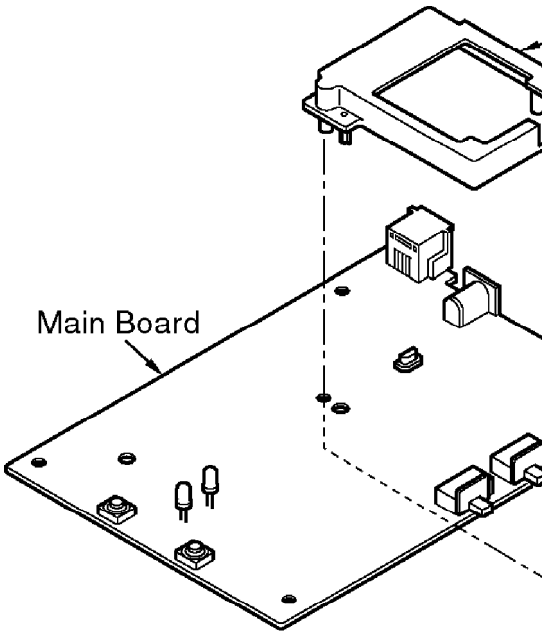
- Use ONLY Panasonic AC ADAPTOR PQLV1. The adaptor must remain connected at all times.
- The AC adaptor may feel warm. This is normal.
- The unit will not function during a power failure.
- This unit cannot be connected in parallel with a single line telephone.

# 4. DISASSEMBLY INSTRUCTIONS

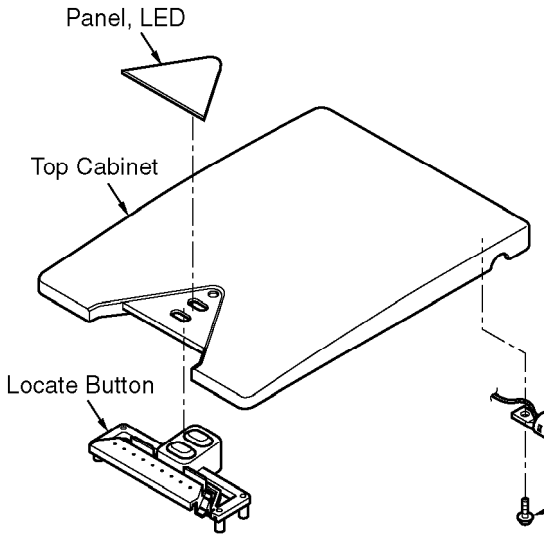
## 4.1. BASE UNIT

**1. Remove the four screws (A), and remove the Bottom Cabinet.**



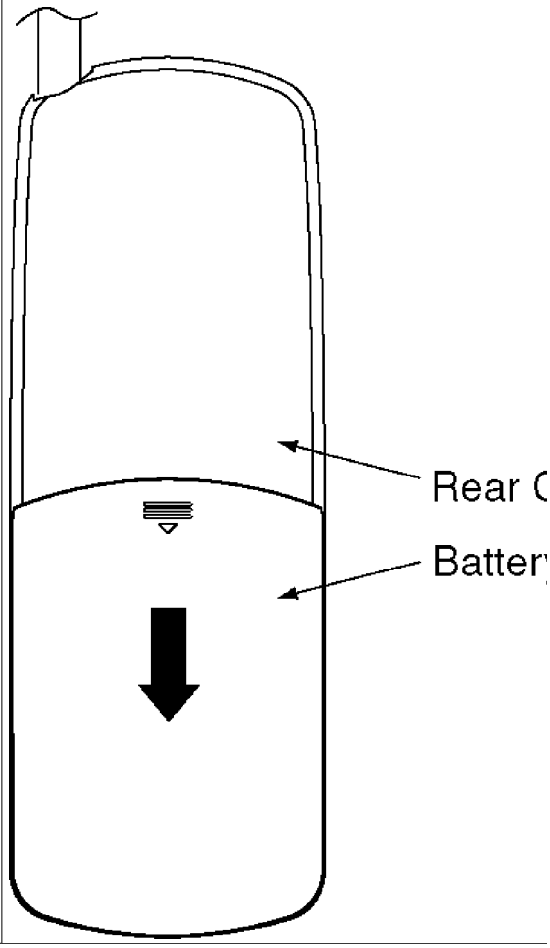
| | |
|---|---|
| **2. Remove the Main Board from the Top Cabinet.** |  |
| **3. Remove the two screws (B), and remove the RF Unit from the Main Board.** |  |

**4. Remove the screw (C), and remove the Antenna from the Top Cabinet.**
**Remove the Panel (LED) and the Button (Locate) from the Top Cabinet.**

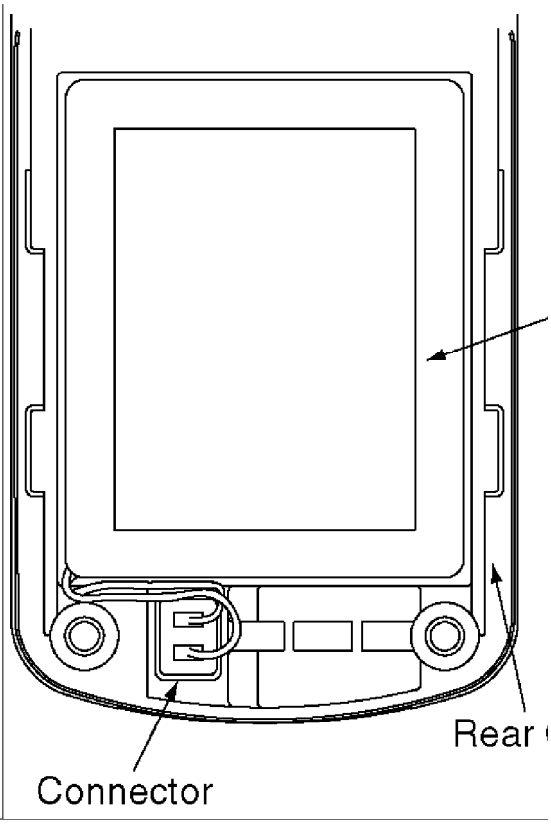



## 4.2. HANDSET

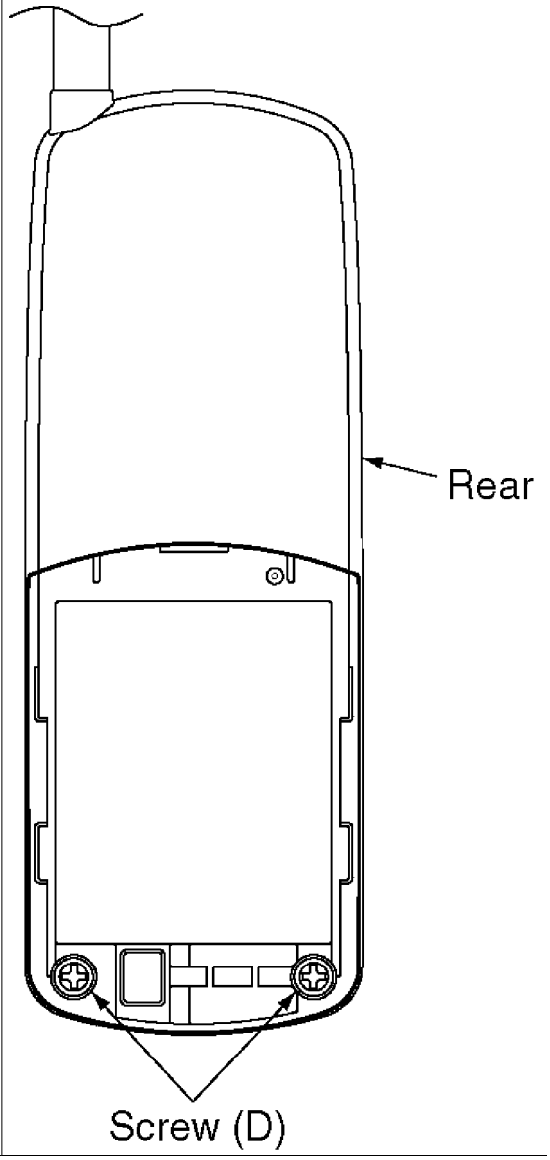
**1. Remove the Battery Cover sliding it in the direction of the arrow.**

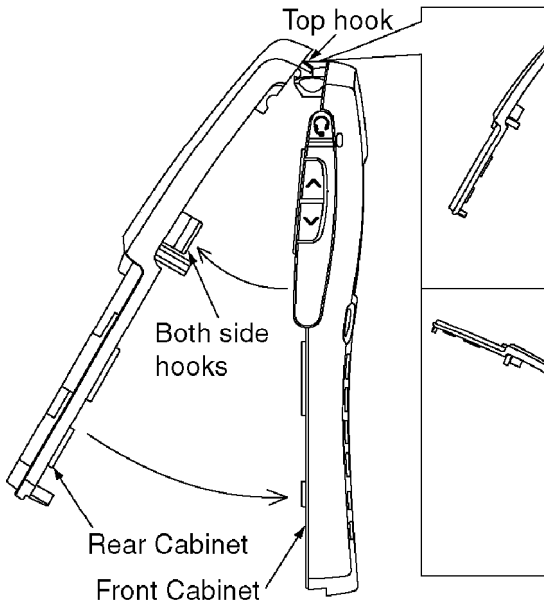
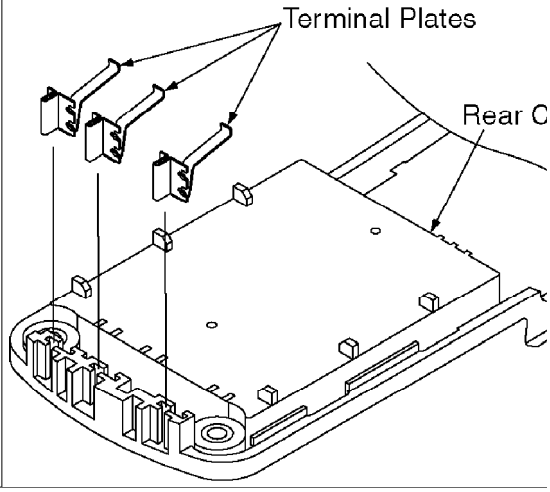


**2. Take the Battery out of the Rear Cabinet after disconnecting the Connector.**

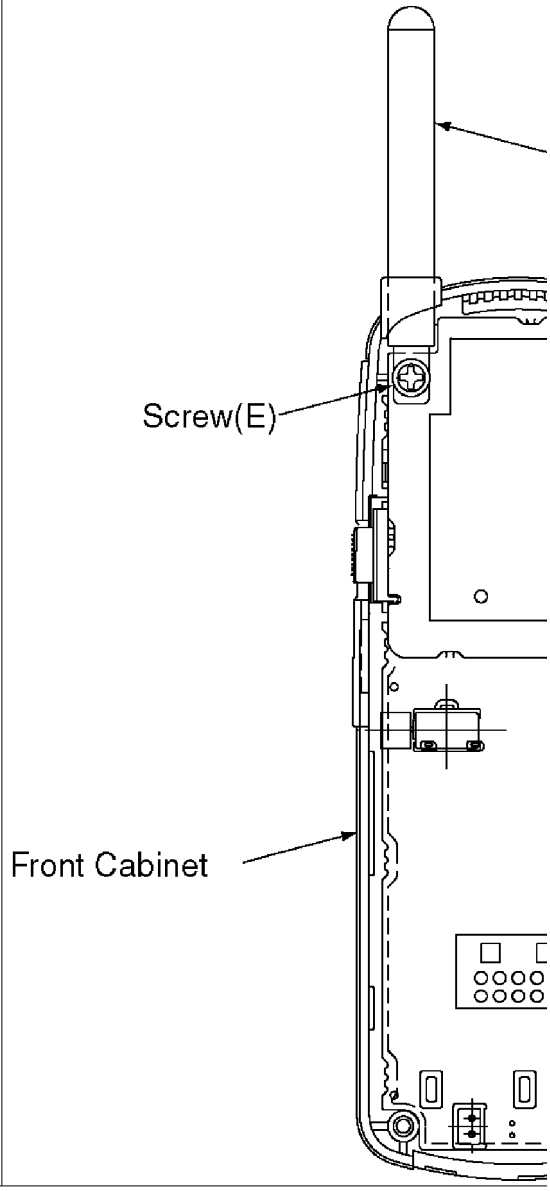


**3. Remove two Screws (D) from the Rear Cabinet.**

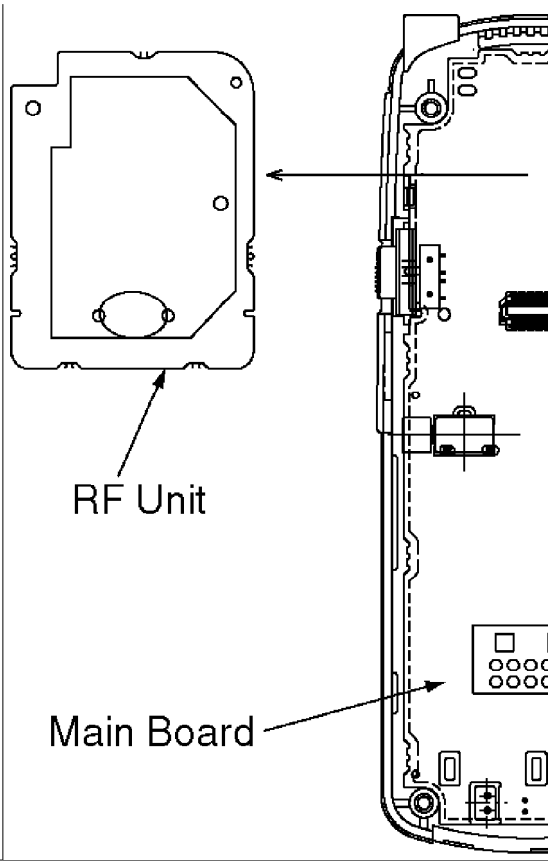


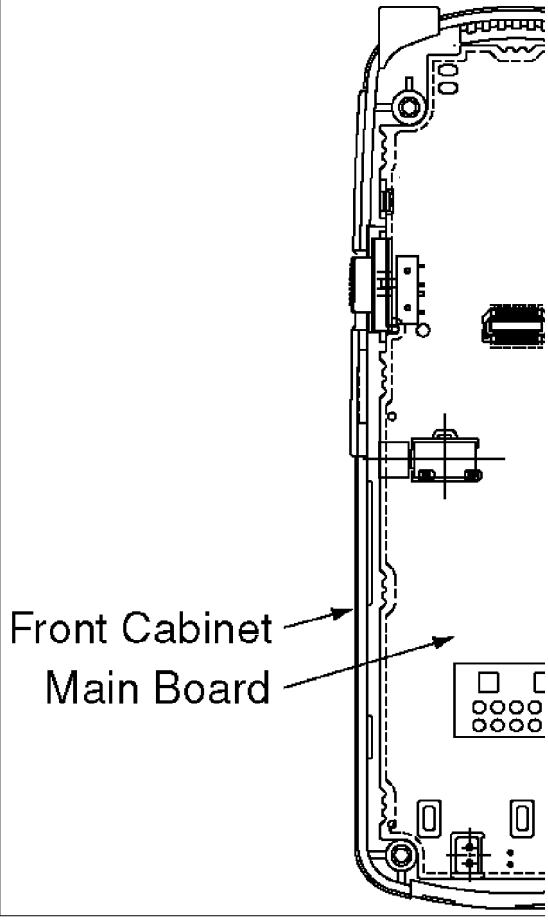
| | |
|---|---|
| **4. Unfasten the Top hook after unfastening Both side hooks to Front Cabinet from Rear Cabinet.**<br><br>**CAUTION:**<br>**If you open the front cabinet too far, the Top hook may snap.** |  |
| **5. Remove three Terminal Plates from the Rear Cabinet.** |  |

**6. Remove the Antenna from the Front Cabinet after removing the Screw (E).**



**7. Remove the RF unit from the Main Board.**



| | |
|---|---|
| **8. Remove the Main Board from the Front Cabinet.** |  |

# 5. ADJUSTMENTS (HANDSET)

## 5.1. EQUIPMENT

**1. Radio tester : Marconi Model 2295A or later.**

**2. DC Power Supply, capable of 3.9V DC supply at 2A.**

**3. Audio Cable : BNC end to alligator clip end.**

**4. Soldering Iron, solder, and various tools.**

**5. AC voltmeter : Available Read out range is -40dBm to 0dBm.**

## 5.2. ADJUSTMENT PREPARATIONS

**Refer to Handset Reference Drawing for connection and test point locations.**

**1. Unscrew both 2 screws from rear cabinet.**

**2. Remove the rear cabinet from front cabinet.**

**3. Connect DC power supply (3.9V) to main board (test point VBAT**

**and GND).**

**4. Connect a distortion meter (with AC voltmeter) to the SPK terminals (SP+) on the handset.**

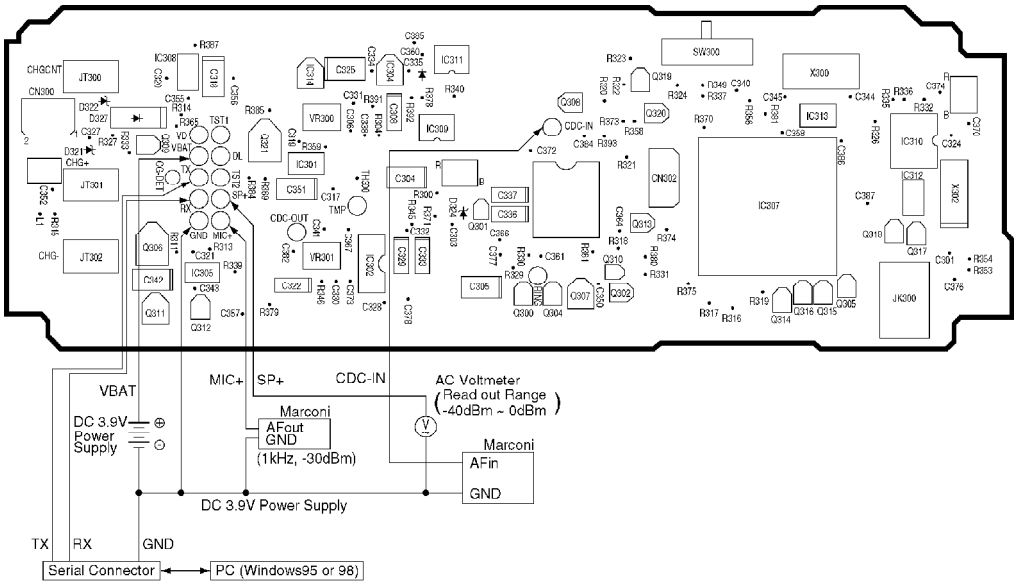
**5. To Enter the Test Mode**

**(1) Connect serial cable to main board. (TX, RX, GND, 3points)**
**(2) Connect other side of serial cable to serial port of PC. (Dsub-9pins connector)**
**(3) Start up the "Procomm plus" and use the script file. [file name : TD7895.WAX]**
**(4) Please use Following Commands.**

**- Test Start Request Commands.**

**- I/O Setting Request Commands.**

| | |
|---|---|
| **Codec** | **: Loop Back** |
| **Setting** | **: Transmit ON** |
| | **: Receiving OFF** |



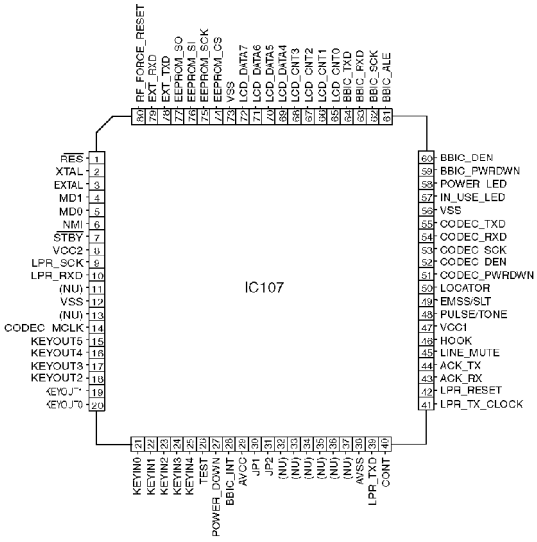

## 5.3. ADJUSTMENT PROCEDURE

| Symptom | Remedy |
|---|---|
| **Speaker level of handset is low.** | **Adjust adjustment item (A), (B).** |
| **Transmission sound is low.** | **Adjust adjustment item (A), (B).** |

| Item | Adjustment Item | Procedure |
|---|---|---|
| (A) | Codec Input Level Adjustment | Adjust Codec Input Level (Test point : CDC-IN) to -12dBm by VR300. |
| (B) | Speaker Output Level Adjustment | Adjust Speaker Output Level (Test point : SP+) to -28dBm by VR301. |

# 6. CPU DATA

## 6.1. BASE UNIT {IC107(CPU)}

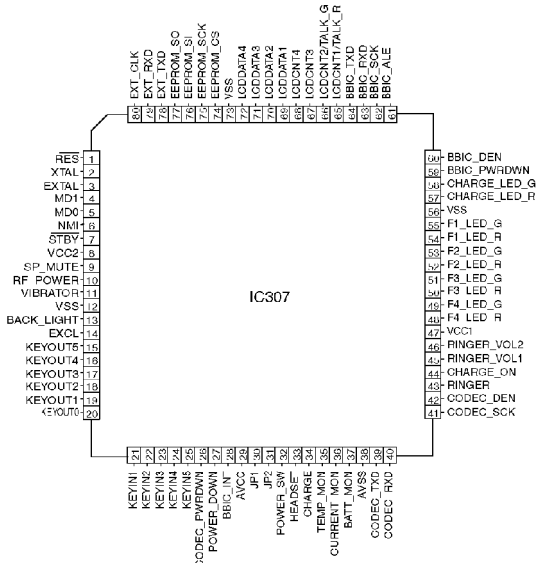



| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 1 | /RES | I | NORMAL | - | RESET |
| 2 | XTAL | I | - | - | - |
| 3 | EXTAL | O | - | - | - |
| 4 | MD1 | I | NORMAL | - | - |
| 5 | MD0 | I | - | - | - |
| 6 | NMI | I | NORMAL | - | NORMAL |
| 7 | /STBY | I | NORMAL | - | - |
| 8 | VCC2 | VDD | - | - | - |
| 9 | LPR SCK | I | - | - | - |
| 10 | LPR RXD | I | - | - | - |
| 11 | Not USE | I | - | - | - |
| 12 | VSS | GND | - | - | - |
| 13 | Not USE | I | - | - | - |
| 14 | CODEC MCLK | O | - | - | - |
| 15 | Not USE | O | - | - | - |
| 16 | Not USE | O | - | - | - |
| 17 | Not USE | O | - | - | - |
| 18 | Not USE | O | - | - | - |

| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 19 | Not USE | O | - | - | - |
| 20 | Not USE | O | - | - | - |
| 21 | Not USE | I | - | - | - |
| 22 | Not USE | I | - | - | - |
| 23 | Not USE | I | - | - | - |
| 24 | Not USE | I | - | - | - |
| 25 | Not USE | I | - | - | - |
| 26 | TEST | I | NORMAL | - | - |
| 27 | POWER DOWN | I | NORMAL | - | POWER DOWN |
| 28 | BBIC INT | I | NORMAL | - | INT |
| 29 | AVCC | VDD | - | - | - |
| 30 | Not USE (JP1) | I | - | - | NORMAL |
| 31 | Not USE (JP2) | I | - | - | NORMAL |
| 32 | Not USE | I | - | - | NORMAL |
| 33 | Not USE | I | - | - | NORMAL |
| 34 | Not USE | I | - | - | NORMAL |
| 35 | Not USE | I | - | - | NORMAL |
| 36 | Not USE | I | - | - | NORMAL |
| 37 | Not USE | I | - | - | NORMAL |
| 38 | AVSS | GND | - | - | - |
| 39 | LPR TX | O | - | - | - |
| 40 | CONT | I | - | - | - |
| 41 | LPR CLK | O | - | - | - |
| 42 | LPR RESET | O | - | - | - |
| 43 | ACK RX | I | - | - | - |
| 44 | ACK TX | O | - | - | - |
| 45 | LINE MUTE | O | MUTE | - | - |
| 46 | HOOK | O | OFF HOOK | - | ON HOOK |
| 47 | VCC1 | VDD | - | - | - |
| 48 | PULSE/TONE | I | PULSE | - | TONE |
| 49 | EMSS/SLT | I | SLT | - | EMSS |
| 50 | LOCATOR | I | NORMAL | - | ON |
| 51 | CODEC PWR DWN | O | ON | - | OFF |
| 52 | CODEC DEN | O | - | - | - |
| 53 | CODEC SCK | O | - | - | - |
| 54 | CODEC RXD | I | - | - | - |
| 55 | CODEC TXD | O | - | - | - |
| 56 | VSS | GND | - | - | - |
| 57 | INUSE LED | O | OFF | - | ON |
| 58 | POWER LED | O | OFF | - | ON |

| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 59 | BBIC_PWRDWN | O | PWRDWN | - | - |
| 60 | BBIC_DEN | O | - | - | - |
| 61 | BBIC_ALE | O | - | - | - |
| 62 | BBIC_SCK | O | - | - | - |
| 63 | BBIC_RXD | I | - | - | - |
| 64 | BBIC_TXD | O | - | - | - |
| 65 | LCD CNT0 | O | NORMAL | - | RESET |
| 66 | LCD CNT1 | O | - | - | - |
| 67 | LCD CNT2 | O | NORMAL | - | WRITE |
| 68 | LCD CNT3 | O | NORMAL | - | CHIP SELECT |
| 69 | LCD DAT4 | O | - | - | - |
| 70 | LCD DAT5 | O | - | - | - |
| 71 | LCD DAT6 | O | - | - | - |
| 72 | LCD DAT7 | O | - | - | - |
| 73 | VSS | GND | - | - | - |
| 74 | EEPOROM_CS | O | SELECT | - | - |
| 75 | EEPROM_SCK | O | - | - | - |
| 76 | EEPROM_SI | O | - | - | - |
| 77 | EEPROM_SO | I | - | - | - |
| 78 | Not USE (EXT_RXD) | O | - | - | - |
| 79 | Not USE (EXT_TXD) | I | - | - | - |
| 80 | EXT_CLK | O | - | - | - |

## 6.2. HANDSET {IC307(CPU)}



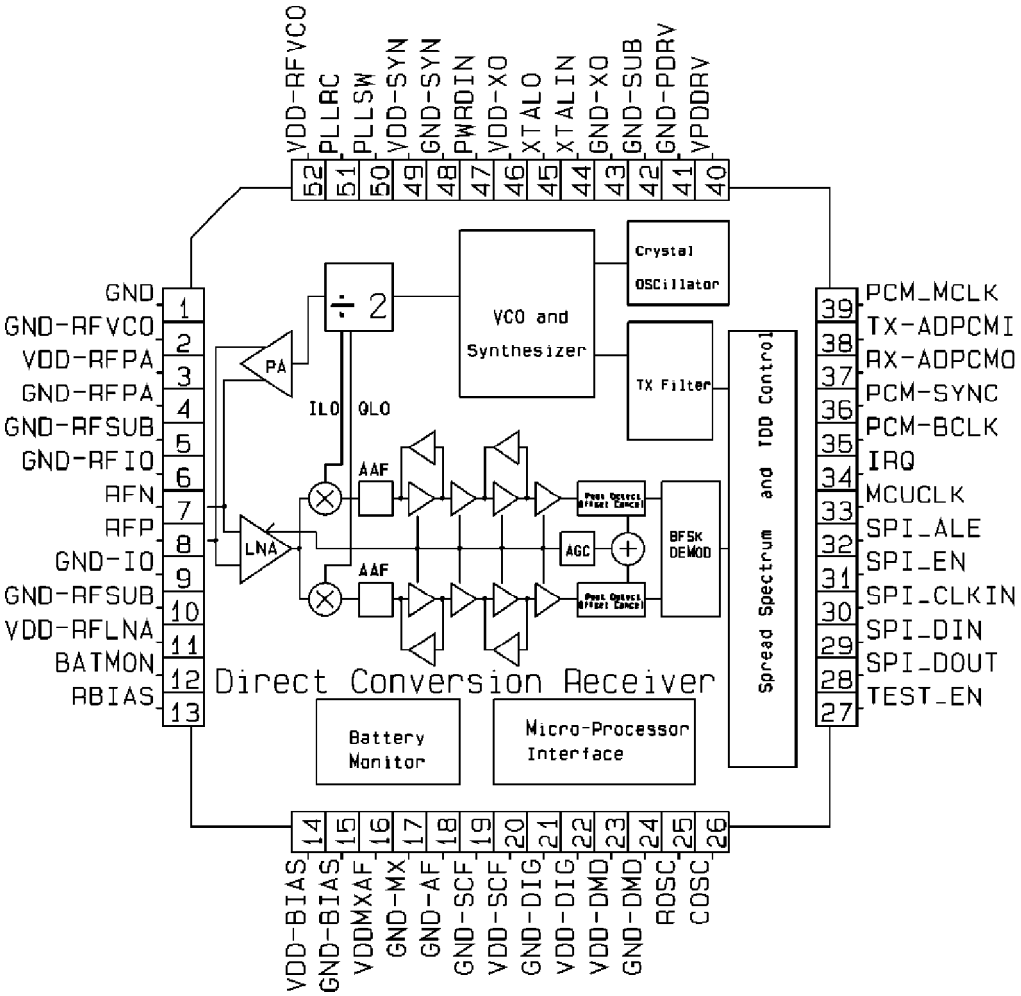
| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 1 | /RES | I | NORMAL | - | RESET |
| 2 | XTAL | I | - | - | - |
| 3 | EXTAL | O | - | - | - |
| 4 | MD1 | I | NORMAL | - | - |
| 5 | MD0 | I | - | - | NORMAL |
| 6 | NMI | I | NORMAL | - | - |
| 7 | Not USE (/ STBY) | I | NORMAL | - | - |
| 8 | VCC2 | VDD | - | - | - |
| 9 | Mic MUTE | I | Mic ON | - | Mic ON |
| 10 | RF POWER | I | RF ON | - | RF ON |
| 11 | VIBRATOR | I | ON | - | OFF |
| 12 | VSS | GND | - | - | - |
| 13 | BACK LIGHT | O | OFF | - | ON |
| 14 | 32.768kHz IN | I | - | - | - |
| 15 | KEY-OUT5 | O | - | - | STROBE ON |
| 16 | KEY-OUT4 | O | - | - | STROBE ON |
| 17 | KEY-OUT3 | O | - | - | STROBE ON |
| 18 | KEY-OUT2 | O | - | - | STROBE ON |
| 19 | KEY-OUT1 | O | - | - | STROBE ON |
| 20 | KEY-OUT0 | O | - | - | STROBE ON |
| 21 | KEY-IN1 | I | - | - | KEY ON |
| 22 | KEY-IN2 | I | - | - | KEY ON |
| 23 | KEY-IN3 | I | - | - | KEY ON |
| 24 | KEY-IN4 | I | - | - | KEY ON |
| 25 | KEY-IN5 | I | - | - | KEY ON |
| 26 | CODEC POWER DOWN | O | ON | - | OFF |
| 27 | POWER DOWN | I | NORMAL | - | POWER DOWN |
| 28 | BBIC INT | I | NORMAL | - | INT |
| 29 | AVCC | VDD | - | - | - |
| 30 | JP1 | I | NORMAL | - | - |
| 31 | JP2 | I | 7894 | - | 7895 |
| 32 | POWER_SW | I | ON | - | OFF |
| 33 | HEADSET | I | HEADSET | - | NORMAL |
| 34 | CHARGE | I | ON | - | OFF |

| | | | | | |
|---|---|---|---|---|---|
| 34 | CHARGE | 1 | ON | - | OFF |

| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 35 | TEMP_MONITOR | I | - | - | - |
| 36 | CRNT_MNTR | O | NORMAL | - | - |
| 37 | BATT_MONITOR | I | - | - | - |
| 38 | AVSS | GND | - | - | - |
| 39 | CODEC_TXD | O | - | - | - |
| 40 | CODEC_RXD | I | - | - | - |
| 41 | CODEC_SCK | O | - | - | - |
| 42 | CODEC_DEN | O | - | - | - |
| 43 | RINGER | O | - | - | - |
| 44 | CHARGE_ON | O | NORMAL | - | STOP |
| 45 | RINGER_VOL1 | O | Max | - | - |
| 46 | RINGER_VOL2 | O | Mid | - | - |
| 47 | VCC1 | VDD | - | - | - |
| 48 | F4_LED_R | O | OFF | - | ON |
| 49 | F4_LED_G | O | OFF | - | ON |
| 50 | F3_LED_R | O | OFF | - | ON |
| 51 | F3_LED_G | O | OFF | - | ON |
| 52 | F2_LED_R | O | OFF | - | ON |
| 53 | F2_LED_G | O | OFF | - | ON |
| 54 | F1_LED_R | O | OFF | - | ON |
| 55 | F1_LED_G | O | OFF | - | ON |
| 56 | VSS | GND | - | - | - |
| 57 | CHARGE_LED_R | O | OFF | - | ON |
| 58 | CHARGE_LED_G | O | OFF | - | ON |
| 59 | BBIC_PWRDWN | O | PWRDWN | - | - |
| 60 | BBIC_DEN | O | - | - | - |
| 61 | BBIC_ALE | O | - | - | - |
| 62 | BBIC_SCK | O | - | - | - |
| 63 | BBIC_RXD | I | - | - | - |
| 64 | BBIC_TXD | O | - | - | - |
| 65 | LCD CNT1/ TALK_R | O | NORMAL | - | RESET |
| 66 | LCD CNT1/ TALK_G | O | - | - | - |
| 67 | LCD CNT3 | O | NORMAL | - | WRITE |
| 68 | LCD CNT4 | O | NORMAL | - | CHIP SELECT |
| 69 | LCD DAT1 | O | - | - | - |
| 70 | LCD DAT2 | O | - | - | - |
| 71 | LCD DAT3 | O | - | - | - |
| 72 | LCD DAT4 | O | - | - | - |
| 73 | VSS | GND | - | - | - |
| 74 | EEPOROM_CS | O | SELECT | - | - |

| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 75 | EEPROM_SCK | O | - | - | - |
| 76 | EEPROM_SI | O | - | - | - |
| 77 | EEPROM_SO | I | - | - | - |
| 78 | EXT_TXD | O | - | - | - |
| 79 | EXT_RXD | I | - | - | - |
| 80 | EXT_CLK | I | - | - | - |

## 6.3. RF UNIT {IC501(PRL)}



| Pin | Description | I/O |
|---|---|---|
| 1 | GND | NA |
| 2 | GND-RFVCO | NA |
| 3 | VDD-RFPA | NA |
| 4 | GND-RFPA | NA |
| 5 | GND-RFSUB | NA |
| 6 | GND-RFIO | NA |
| 7 | RFN | I/O |
| 8 | RFP | I/O |
| 9 | GND-RFIO | NA |
| 10 | GND-RFSUB | NA |
| 11 | VDD-RFLNA | NA |
| 12 | BATMON | I |
| 13 | RBIAS | NA |
| 14 | VDD-BIAS | NA |
| 15 | GND-BIAS | NA |
| 16 | VDD-MXAF | NA |
| 17 | GND-MX | NA |
| 18 | GND-AF | NA |
| 19 | GND-SCF | NA |
| 20 | VDD-SCF | NA |
| 21 | GND-DIG | NA |
| 22 | VDD-DIG | NA |
| 23 | VDD-DMD | NA |
| 24 | GND-DMD | NA |
| 25 | ROSC | NA |
| 26 | COSC | NA |

| Pin | Description | I/O |
|---|---|---|
| 27 | TEST_EN | I |
| 28 | SPI_DOUT | O |
| 29 | SPI_DIN | I |
| 30 | SPI_CLKIN | I |
| 31 | SPI_EN | I |
| 32 | SPI_ALE | I |
| 33 | MCUCLK | O |
| 34 | IRQ | O |
| 35 | PCM_BCLK | O |
| 36 | PCM_SYNC | O |
| 37 | RX_ADPCMO | O |
| 38 | TX_ADPCMI | I |
| 39 | PCM_MCLK | O |
| 40 | VPDDRV | NA |
| 41 | GND-PDRV | NA |
| 42 | GND-SUB | NA |
| 43 | GND-XO | NA |
| 44 | XTALIN | I |
| 45 | XTALO | O |
| 46 | VDD-XO | NA |
| 47 | PWRDIN | I |
| 48 | GND-SYN | NA |
| 49 | VDD-SYN | NA |
| 50 | PLLSW | NA |
| 51 | PLLRC | NA |
| 52 | VDD-RFVCO | NA |

## 6.4. RF UNIT (FREQUENCY TABLE)

**(TDD: time division duplex)**

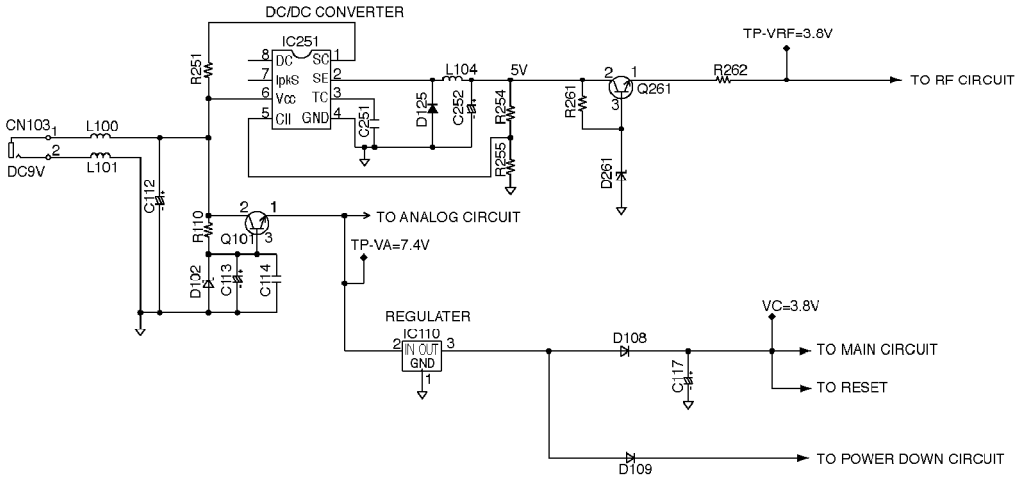
| Channel | TX/RX Frequency (MHz) | Channel | TX/RX Frequency (MHz) |
|---|---|---|---|
| 1 | 906.000 | 14 | 915.750 |
| 2 | 906.750 | 15 | 916.500 |
| 3 | 907.500 | 16 | 917.250 |
| 4 | 908.250 | 17 | 918.000 |
| 5 | 909.000 | 18 | 918.750 |
| 6 | 909.750 | 19 | 919.500 |
| 7 | 910.500 | 20 | 920.250 |
| 8 | 911.250 | 21 | 921.000 |
| 9 | 912.000 | 22 | 921.750 |
| 10 | 912.750 | 23 | 922.500 |
| 11 | 913.500 | 24 | 923.250 |
| 12 | 914.250 | 25 | 924.000 |
| 13 | 915.000 | 26 | 924.750 |

# 7. CIRCUIT OPERATION (BASE UNIT)

## 7.1. MAIN BOARD

### 7.1.1. POWER SUPPLY CIRCUIT

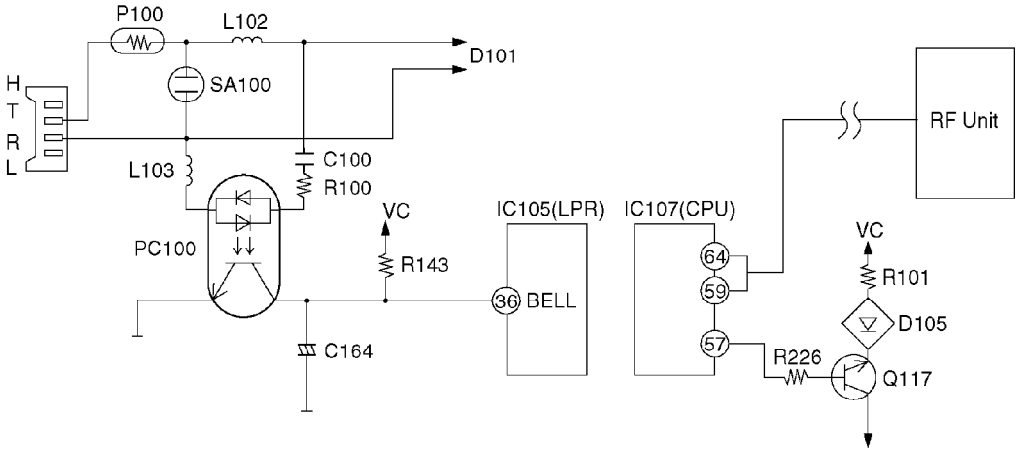
**The Voltage between 9V and 16V is supplied to the DC Jack from the AC adaptor.**
**The Power for the RF Unit is supplied from IC251 and Q261.**
**The Power for the Analog Circuit is supplied from Q101.**
**The Power for the Main Board, Reset and Power Down Circuit are supplied from IC110.**




### 7.1.2. BELL DETECTOR CIRCUIT

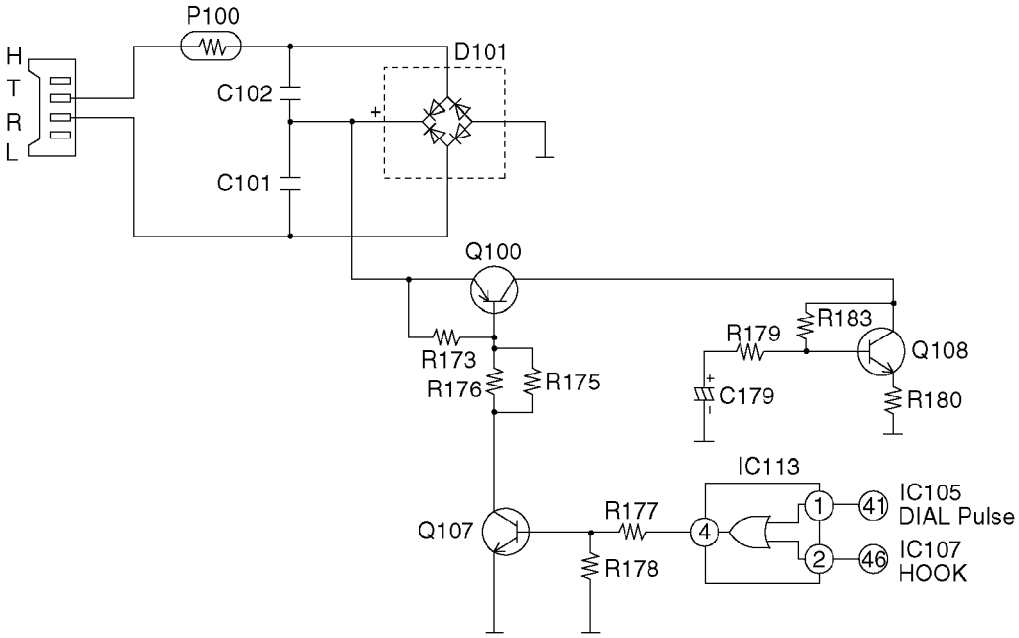
**When the Bell signal is input between T/R, the signal of which waveform is shaped through C100 → R100 → PC100 is input to pin (36) of the IC105(LPR). When the IC105(LPR) detects the**

**Bell signal, IC107(57) repeats High/Low fluctuation and then D105 in use is flashed. The data signal indicating the Bell incoming is sent to the portable unit through the RF unit so the handset ringer is on.**




## 7.1.3. LINE INTERFASE

**The line is looped when the IC107(46) becomes High and Q107 and Q100 are ON. The looped current flows through Q100 → Q108 → R180. The pulse signal is generated when the IC105(41) is repeatedly turned ON/OFF.**




## 7.1.4. RECEIVED VOICE SIGNAL PATH

**The analog input signal from the telephone line is changed to a digital signal and sent to the RF unit via the following path:**

**T/R → D101 → Q100 → R185 → C184 → R217 → C186 → Q104 → R105 → C104 → C125 → R128 → IC102(3) → IC102(4) → C131 → C147 → R194 → IC106(1) → IC106(25) → RF unit**

## 7.1.5. SENT VOICE SIGNAL PATH

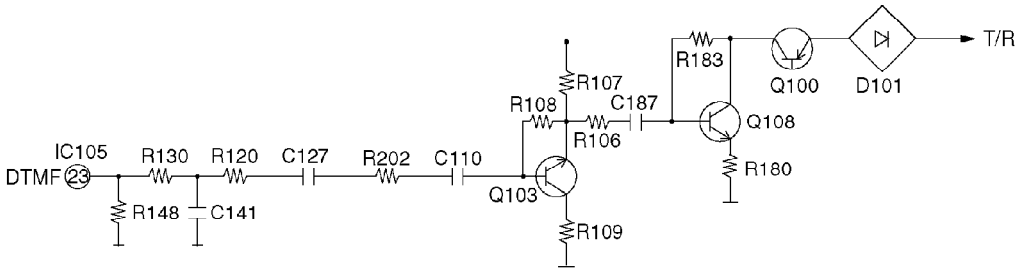
**The digital input signal from the RF unit is changed to an analog signal by IC106 and sent to the**

**telephone line. Via the following path:**

**RF unit → IC106(24) → IC106(11) → C153 → R193 → C162 → Q115 → C159 → R202 → C110 → Q103 → R106 → C187 → Q108 → Q100 → D101 → T/R**

## 7.1.6. DTMF SIGNAL

**When the DTMF data from the portable unit is received, the DTMF signal is output from the IC105(23) and sent to the line.**




## 7.1.7. LINK MODE AND HOOK

**Normally the line mute is controlled by LPR(IC105). When wearing the headset, it is controlled by CPU(IC107) in the auto answer mode only. Also the Hook is controlled by CPU(IC107) in the auto answer mode only.**

**Line Mute Control**

| | STANDBY | TALK |
|---|---|---|
| [Normal] | | |
| IC105(42) | H | L |
| IC107(45) | H | H |
| [Auto Answer] | | |
| IC105(42) | H | H |
| IC107(45) | H | L |

**IC112(4) (AND)**
**H : Line Mute**

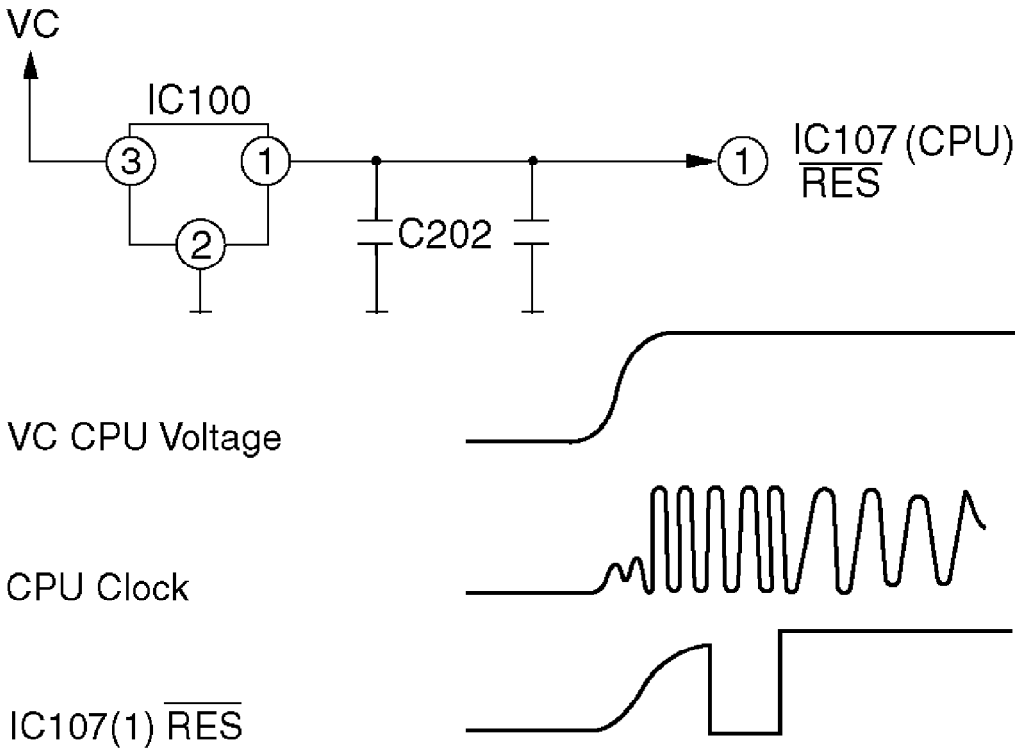
**Hook Control**

| | STANDBY | TALK |
|---|---|---|
| [Normal] | | |
| IC105(41) | L | H |
| IC107(46) | L | L |
| [Auto Answer] | | |
| IC105(41) | L | H |
| IC107(46) | L | L |

**IC113(4) (OR)**
**H : Hook (OFF Hook)**

## 7.1.8. RESET CIRCUIT

**This circuit is used for transmission of a reset pulse to the CPU(IC107). Reset pulse is Low.**




## 7.1.9. DATA COMMUNICATION CIRCUIT

**FUNCTION**

**The data communication circuit serves the following function (in the EMSS mode):Information exchanger between the EMSS and Base Unit, key input information as well as data for the LED control, etc. this information is continuously exchanged at all times.**

**CIRCUIT OPERATION**

**When the Base Unit receives an IRQ signal from the EMSS and after sending the key input information (19 pulses) to the EMSS and receiving data (47 pulses) for LED control, etc. the**

**EMSS proprietary telephone will return an acknowledgement signal, to the EMSS.**

## 1. Reception

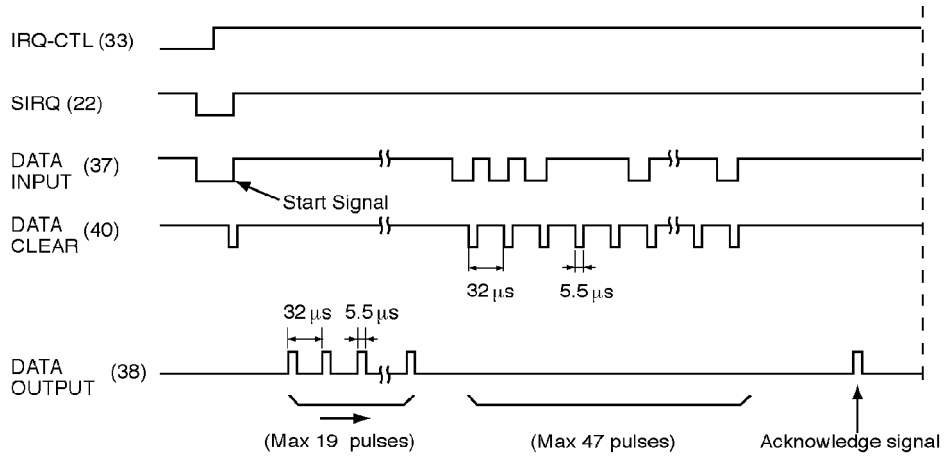
**The data from the EMSS is received via the H and L line along the path shown below.**

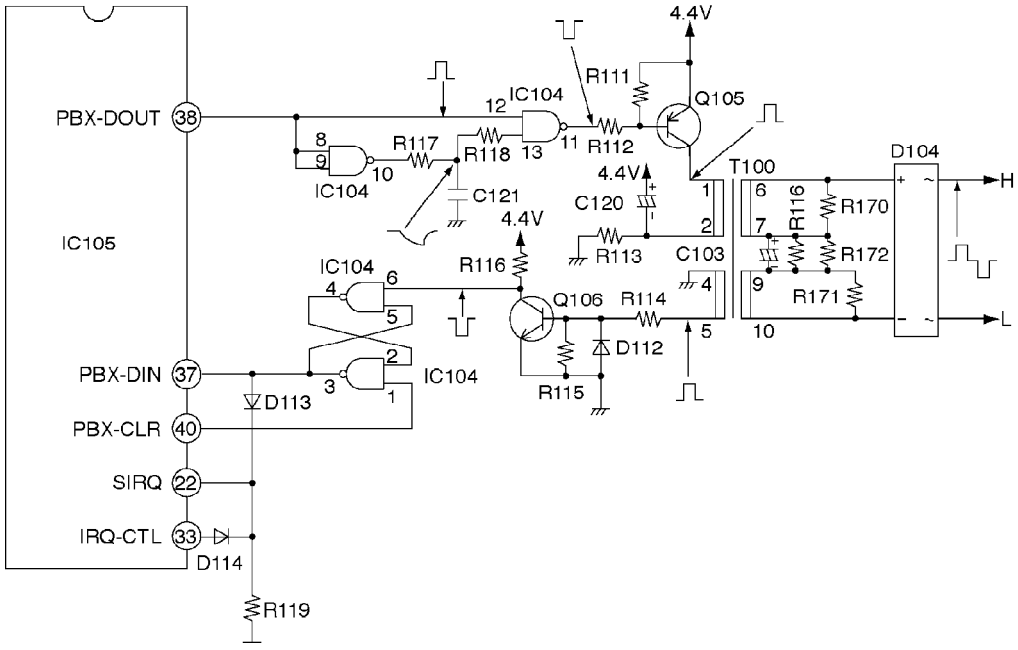
**H, L Line → D104 → T100 → R114 → Q106 → IC104(6) → IC105(37)**

## 2. Transmission

**The data to the Base Unit is transmitted along the following path.**

**IC105(38) → IC104(8),(9),(12) → IC104(11) → R112 → Q105 → T100 → D104 → H, L Line**



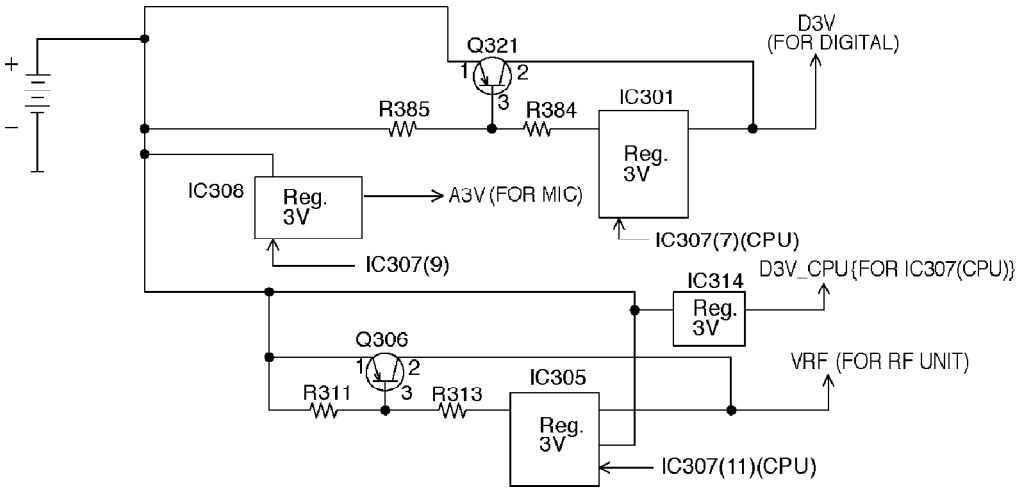



# 8. CIRCUIT OPERATION (HANDSET)

## 8.1. MAIN BOARD

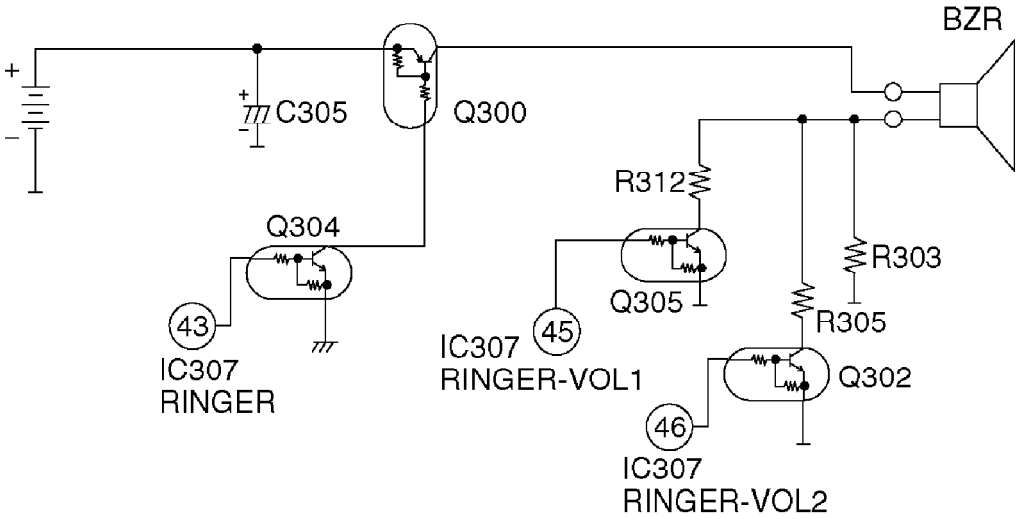
### 8.1.1. POWER SUPPLY CIRCUIT

**The power supply circuit consists of 4 regulators. IC314 supplies the power to the CPU(IC307). IC301, IC305 and IC308 are controlled by the CPU(IC307). Each output voltage is 3.0V.**



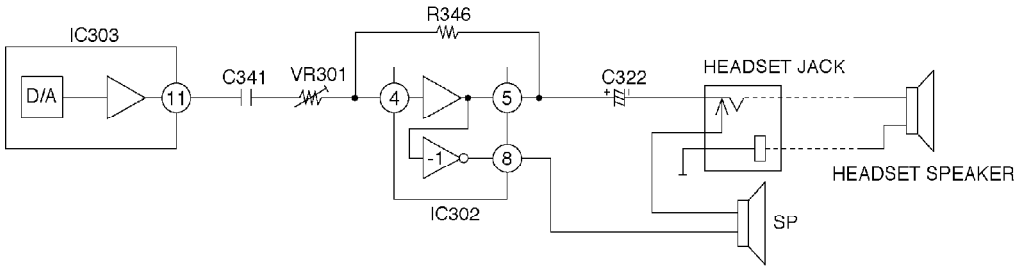

### 8.1.2. RINGER CIRCUIT

**When the Ring signal is received with the power switch of the handset ON, the ringer is activated. When the ring signal is received, IC307(45) and IC307(46) are, set High or Low. (Depends on Ringer Vol setting) After Q302 and Q305 are set High or Low, Q304 and Q300 are switched on by the ringer frequency in IC307(45) (Q300 is a High Current Driver) and the buzzer is then ON.**



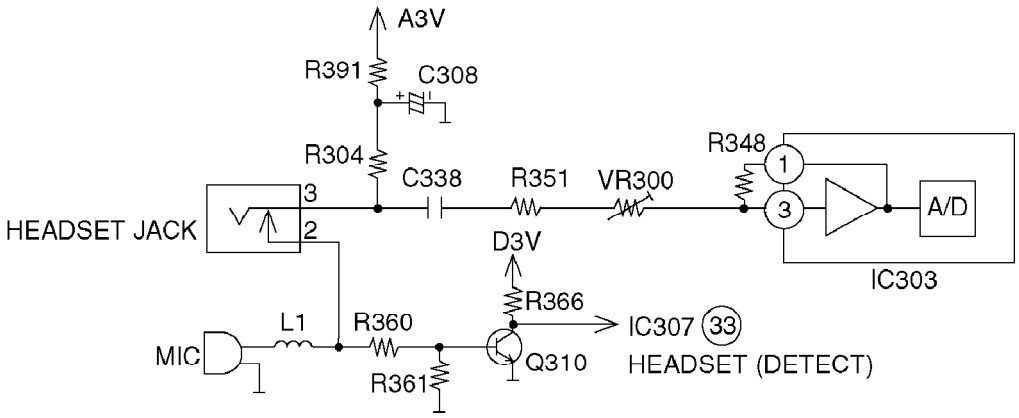

### 8.1.3. RECEIVED VOICE SIGNAL

**The digital voice signal from the Base Unit is changed to a Analog signal by IC303 and sent to the speaker.**

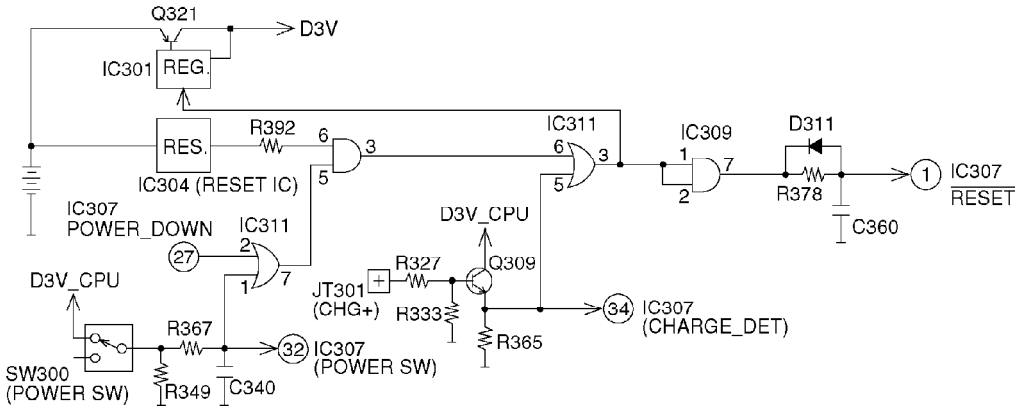



## 8.1.4. SENDING VOICE SIGNAL

**The Analog input signal from Microphone is changed to a digital signal. And sent to the Base Unit.**




## 8.1.5. RESET CIRCUIT




**The IC304 monitors the battery voltage. It becomes "High" when the battery voltage is over 3.2V. Setting the Power SW (SW300) to ON (H), IC309 outputs "High", IC307(1) / RES becomes "High", then the reset is released. When the battery voltage is under 3.2V, the reset is released by putting the unit on the charger.**

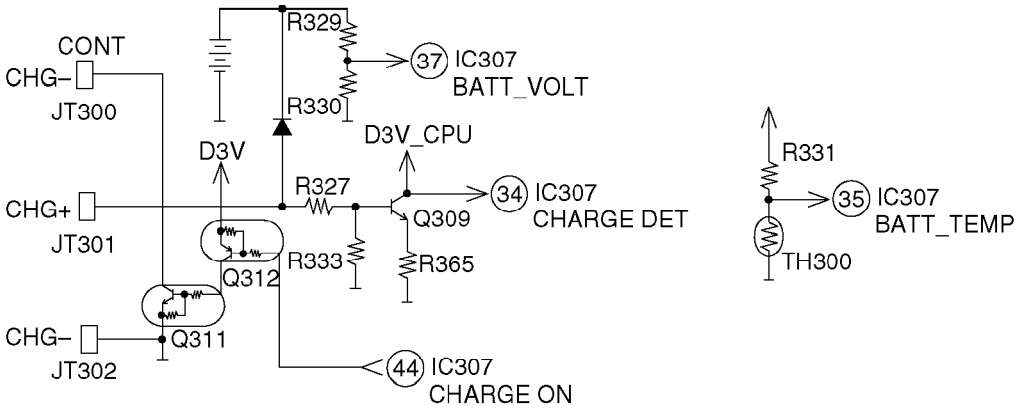
**JT301 : ”High” → Q309 : ON → IC311(5) : “High“ → IC311(3) : “High“ → IC309(1) : “High“ IC307(7) : “High“**

### 8.1.6. CHARGING DETECTION

**If the Handset is put on the charger to recharge it, the DC voltage appears on "CHG+" terminal of battery connector JT301.**

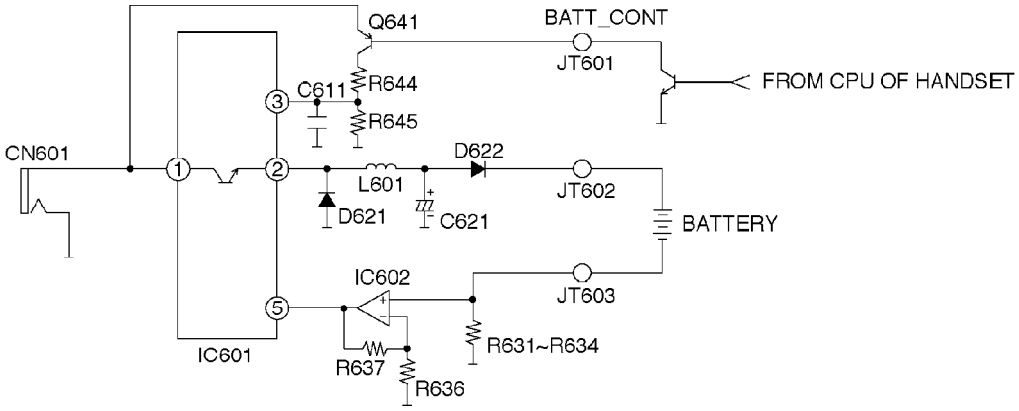
**PUT ON THE CHARGER → Q309 ON → IC307(34) → CHARGE START**

**IC307(44) goes L → Q312 ON → Q311 ON → JT300(CHG-CONT) L → CHARGE STOP**



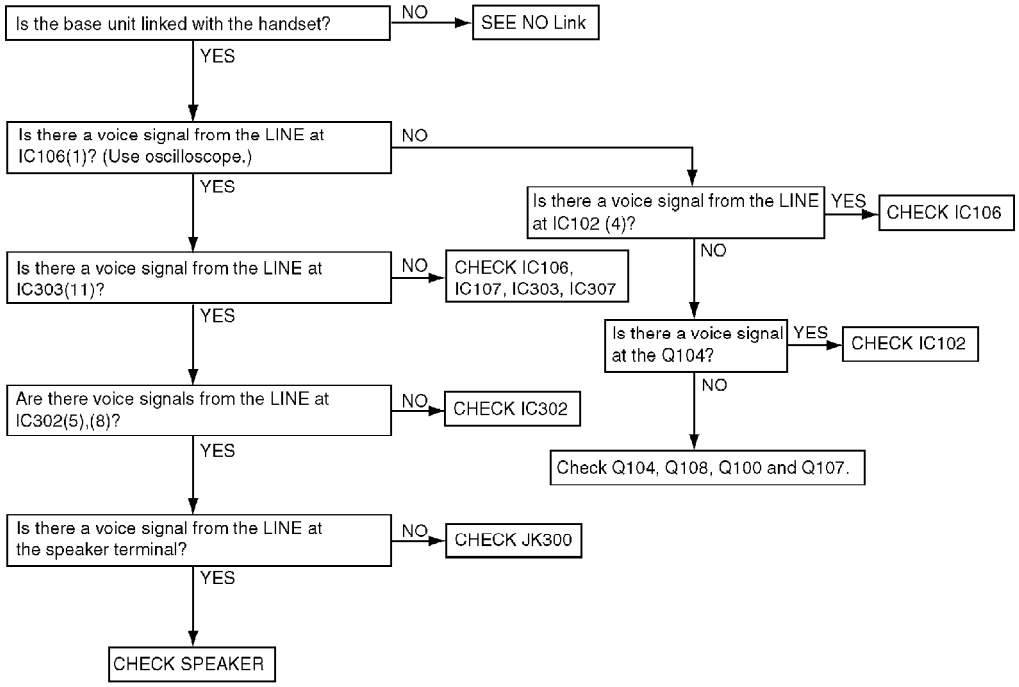

# 9. CIRCUIT OPERATION (CHARGER)

**IC602 amplifies the terminal voltages of R631 to R634 generated by the charge current about 10 times, then supplies them to IC601(5). IC601 controls the charge current and charges the 480mA constant current so that the voltage of pin 5 becomes 1.25V. When charging is completed, the CPU(307) of the portable unit sets the terminal of JT601 to "Low", then Q641 is turned ON. Consequently IC601(3) exceeds 1.25V and switching of IC601 is suspended to stop charging.**

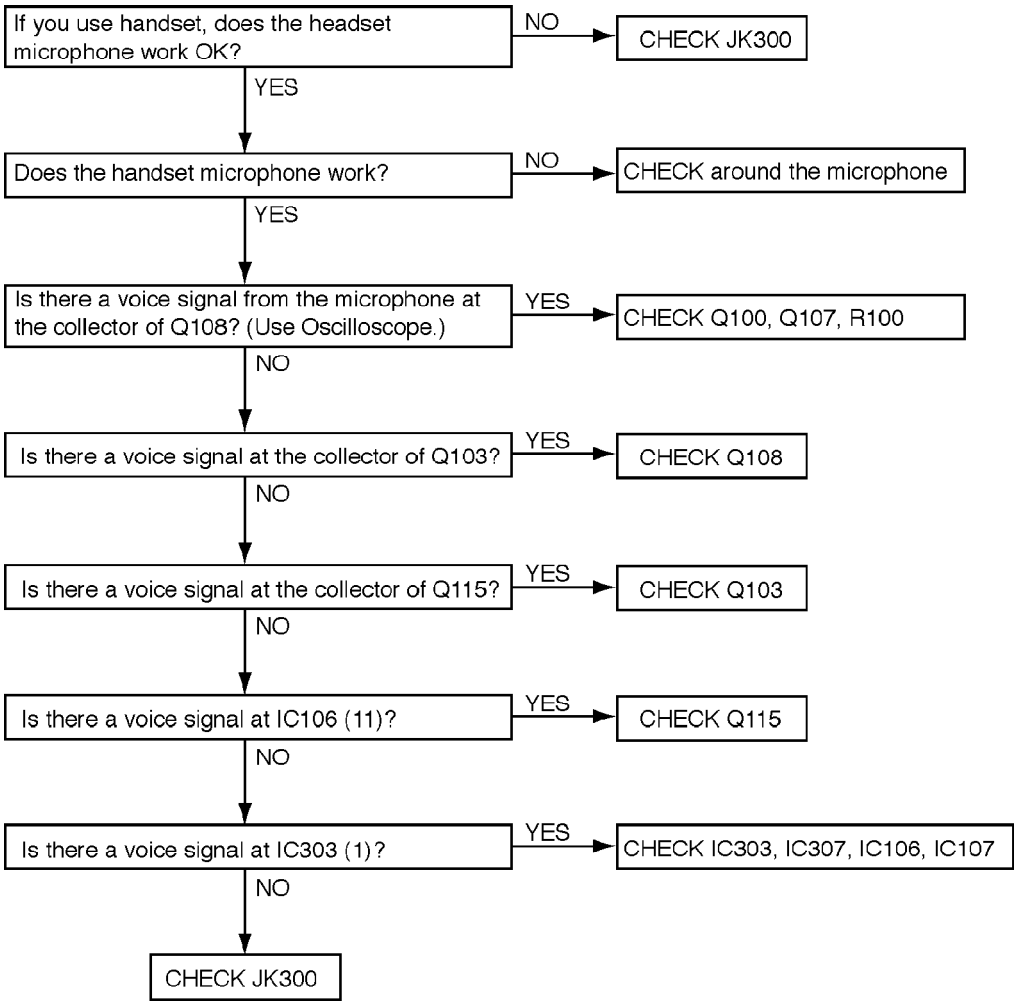



# 10. TROUBLESHOOTING GUIDE

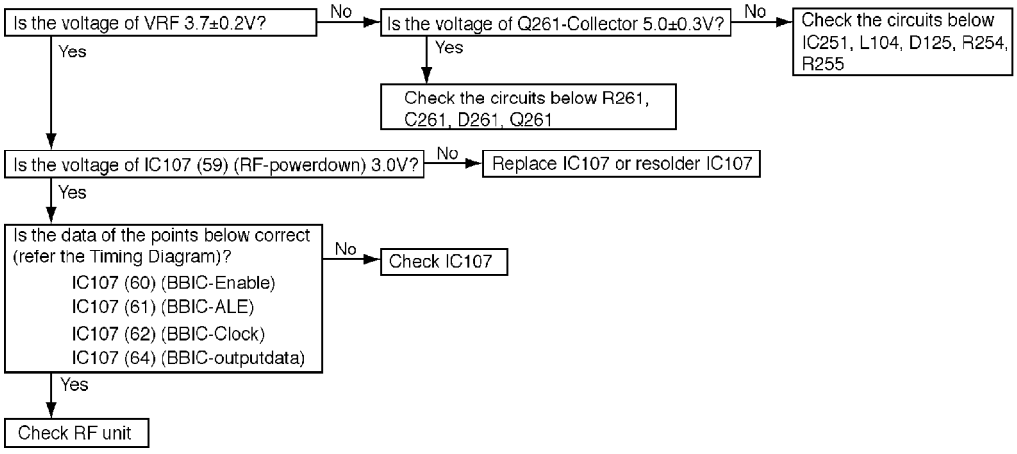
## 10.1. NO VOICE RECEPTION

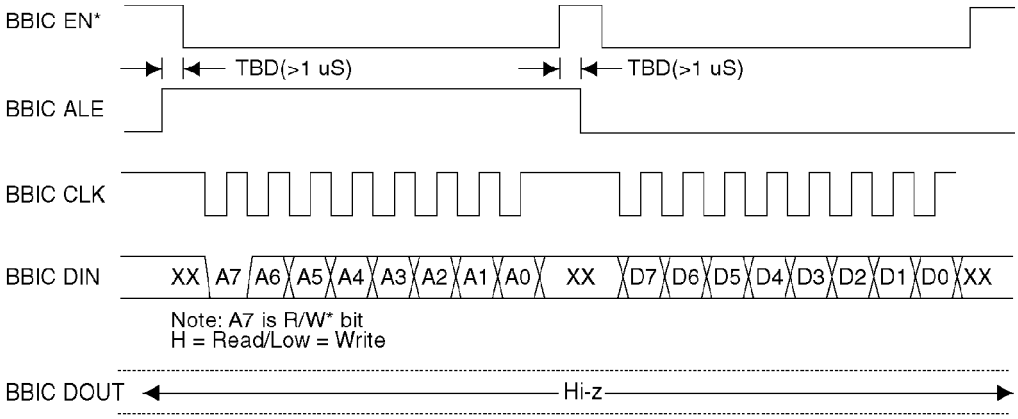



## 10.2. NO VOICE TRANSMISSION

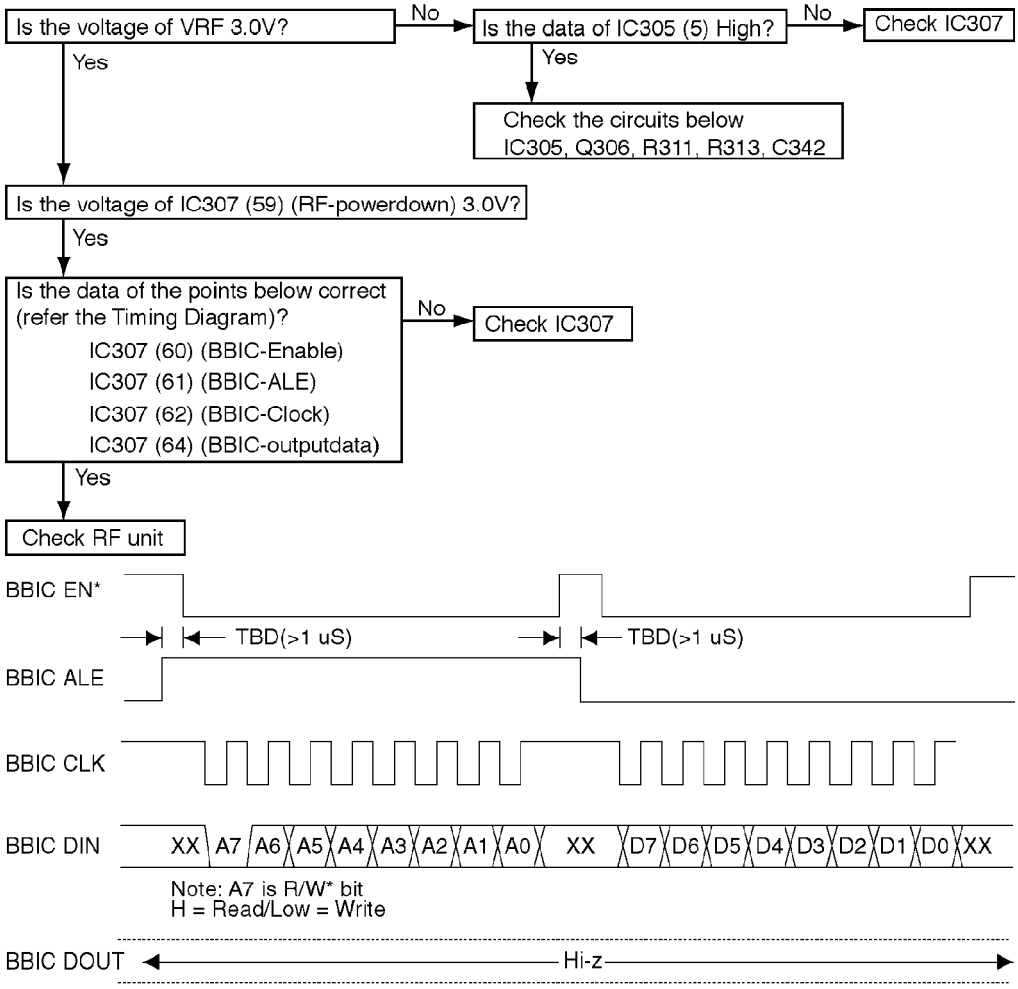



## 10.3. NO LINK (BASE UNIT)




BBIC EN*
TBD(>1 uS)
TBD(>1 uS)
BBIC ALE
BBIC CLK
BBIC DIN
XX A7 A6 A5 A4 A3 A2 A1 A0 XX D7 D6 D5 D4 D3 D2 D1 D0 XX
Note: A7 is R/W* bit
H = Read/Low = Write
BBIC DOUT
Hi-z

## 10.4. NO LINK (HANDSET)




## 10.5. SELF DIAGNOSIS ERROR(BASE UNIT)

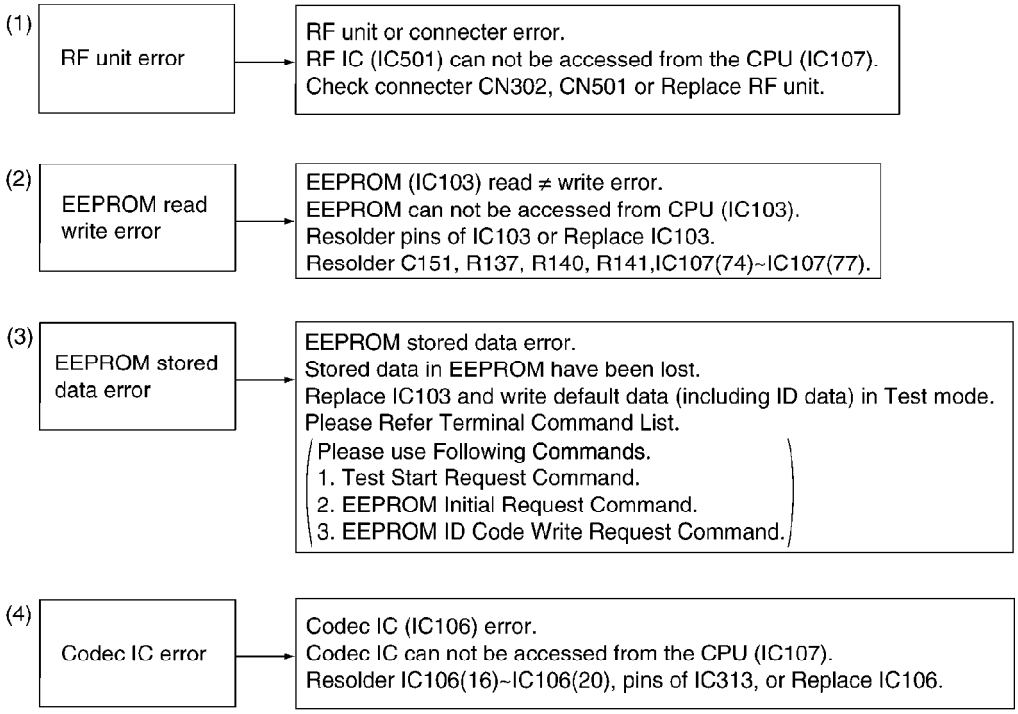
**If you see the blinking of Power LED(red) in intervals of 1 second when you connect the AC adaptor to Base Unit, Self Diagnosis error is detected by CPU.**
**The errors are occurred by following four reasons.**

**(1) RF unit error**

**(2) EEPROM read write error**

**(3) EEPROM stored data error**

**(4) Codec IC error**


(1)
RF unit error
RF unit or connecter error.
RF IC (IC501) can not be accessed from the CPU (IC107).
Check connecter CN302, CN501 or Replace RF unit.
(2)
EEPROM read write error
EEPROM (IC103) read ≠ write error.
EEPROM can not be accessed from CPU (IC103).
Resolder pins of IC103 or Replace IC103.
Resolder C151, R137, R140, R141,IC107(74)~IC107(77).
(3)
EEPROM stored data error
EEPROM stored data error.
Stored data in EEPROM have been lost.
Replace IC103 and write default data (including ID data) in Test mode.
Please Refer Terminal Command List.
Please use Following Commands.
1. Test Start Request Command.
2. EEPROM Initial Request Command.
3. EEPROM ID Code Write Request Command.
(4)
Codec IC error
Codec IC error.
Codec IC can not be accessed from the CPU (IC107).
Resolder IC106(16)~IC106(20), pins of IC313, or Replace IC106.

## 10.6. SELF DIAGNOSIS ERROR(HANDSET)

**If you see the need repair X (X means Idigit NO.) on LCD display of Handset when you turn on the Power Switch, Self Diagnosis error is detected by CPU.**
**The errors are occurred by following five reasons.**

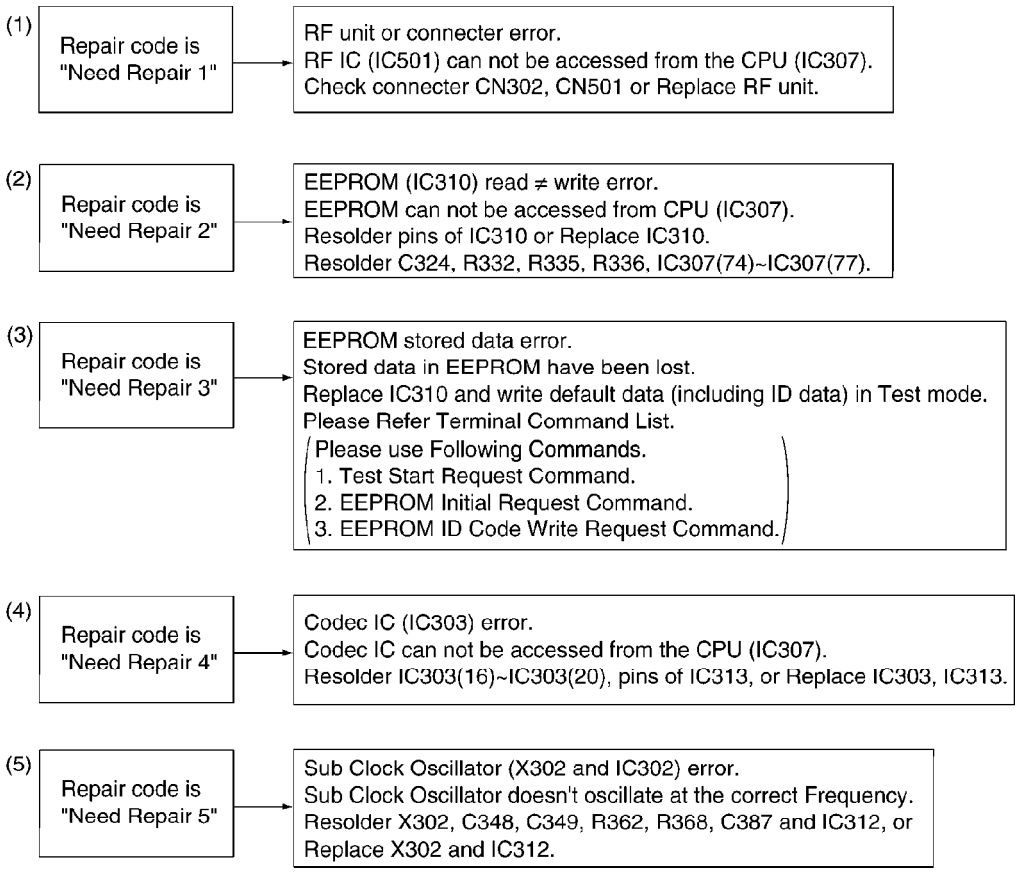
**(1) RF unit error**

**(2) EEPROM read write error**

**(3) EEPROM stored data error**

**(4) Codec IC error**

**(5) Sub Clock Oscillator error**


(1)
Repair code is "Need Repair 1"
RF unit or connecter error.
RF IC (IC501) can not be accessed from the CPU (IC307).
Check connecter CN302, CN501 or Replace RF unit.
(2)
Repair code is "Need Repair 2"
EEPROM (IC310) read ≠ write error.
EEPROM can not be accessed from CPU (IC307).
Resolder pins of IC310 or Replace IC310.
Resolder C324, R332, R335, R336, IC307(74)~IC307(77).
(3)
Repair code is "Need Repair 3"
EEPROM stored data error.
Stored data in EEPROM have been lost.
Replace IC310 and write default data (including ID data) in Test mode.
Please Refer Terminal Command List.
Please use Following Commands.
1. Test Start Request Command.
2. EEPROM Initial Request Command.
3. EEPROM ID Code Write Request Command.
(4)
Repair code is "Need Repair 4"
Codec IC (IC303) error.
Codec IC can not be accessed from the CPU (IC307).
Resolder IC303(16)~IC303(20), pins of IC313, or Replace IC303, IC313.
(5)
Repair code is "Need Repair 5"
Sub Clock Oscillator (X302 and IC302) error.
Sub Clock Oscillator doesn't oscillate at the correct Frequency.
Resolder X302, C348, C349, R362, R368, C387 and IC312, or
Replace X302 and IC312.

# 11. HOW TO REPLACE THE FLAT PACKAGE IC

**If you do not have the special tools (for example: SPOT HEATER) to remove the SPOT HEATER'S Flat IC, if you have solder (large amount) a soldering iron and a cutter knife, you can easily remove IC's even though large than 100 pin.**

## 11.1. PREPARATION

**- SOLDER**

**Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA**

**- Soldering iron**

**Recommended power consumption is between 30 W to 40 W.**
**Temperature of Copper Rod 662 ± 50°F (350 ± 10°C)**
**(An expert may handle a 60~80 W iron, but beginner might damage foil by overheating.)**

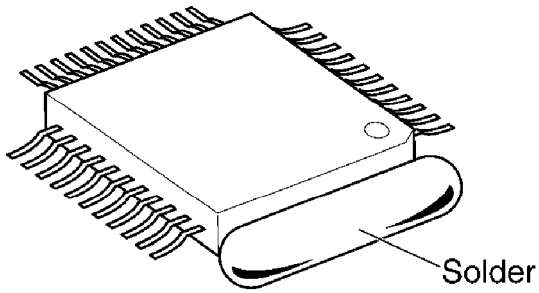
**- Flux**

**HI115 Specific gravity 0.863**
**(Original flux should be replaced daily.)**

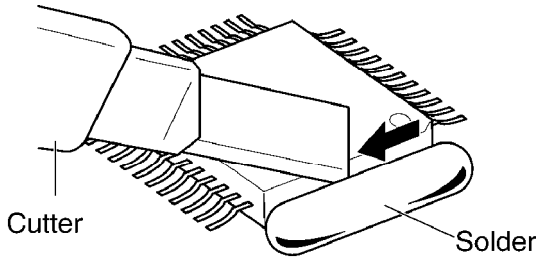
## 11.2. FLAT PACKAGE IC REMOVE PROCEDURE

**1. When all of the IC lead can not been seen at the standard degree, fill with large quantities of solder.**

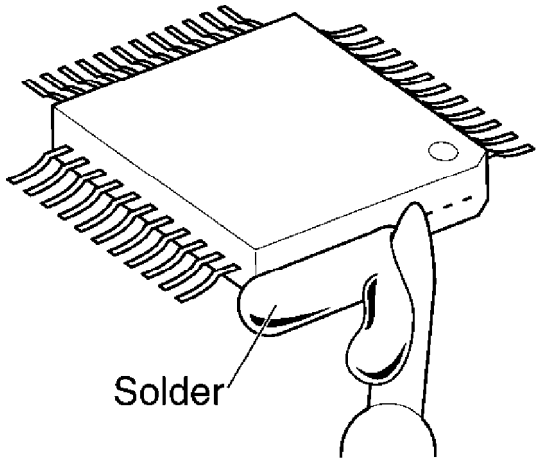
**Note:**
**If you do not fill with solder and directly cut the IC lead with the cutter, stress may build up directly in the P.C.board's pattern. If you do not fill with large quantities of solder as in step 1 the P.C.board pattern may be removed.**




**2. Using a cutter, cut the lead at the source. (Cut the contents with the cutter lightly 5 or 6 times.)**



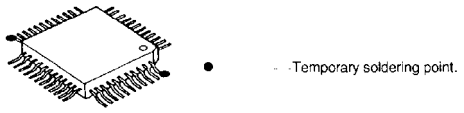

**3. Remove when the solder melts. (Remove the lead at the same time.)**




**After removing the Flat IC and when attaching the new IC, remove any of the excess solder on the land using the soldering wire, etc. If the excess solder is not removed from the land, the IC will slip and not be attached properly.**

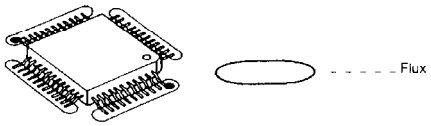
## 11.3. FLAT PACKAGE IC INSTALLATION PROCEDURE

**1. Temporary fix FLAT PACKAGE IC by soldering on two marked pins.**

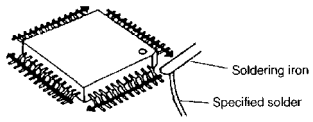



***Check the accuracy of the IC setting with the corresponding soldering foil.**

**2. Apply flux for all pins of FLAT PACKAGE IC.**



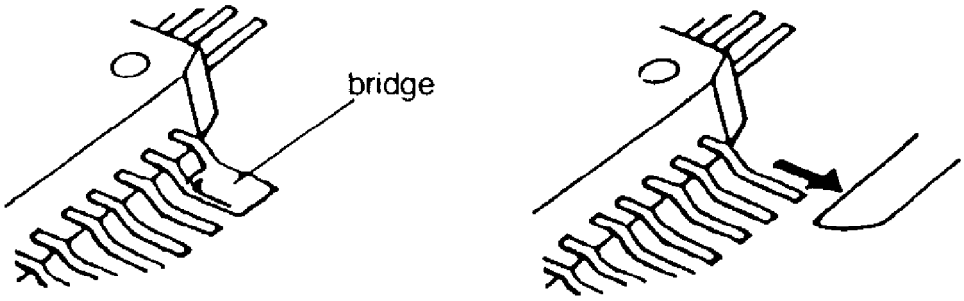

**3. Solder using the specified solder, in the direction of the arrow, by sliding the soldering iron.**




## 11.4. BRIDGE MODIFICATION PROCEDURE

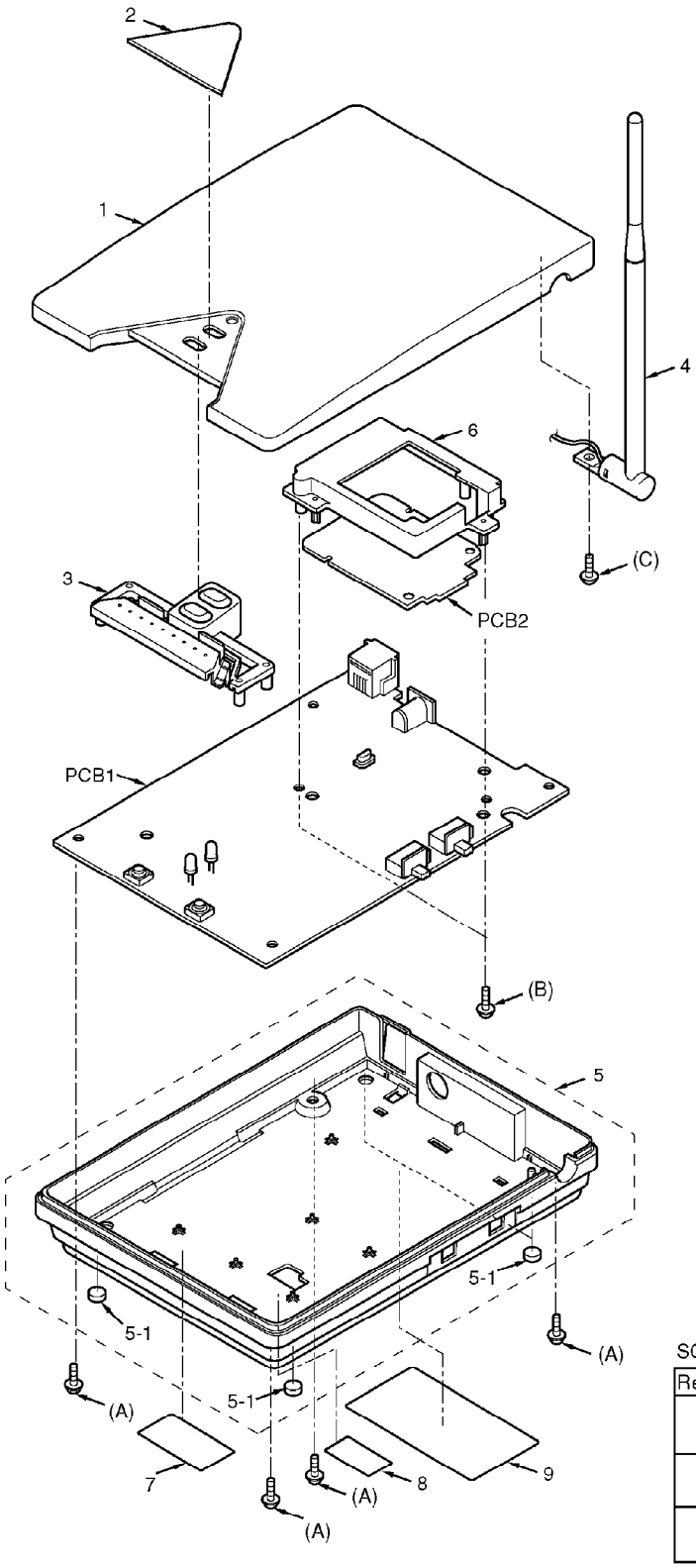
**1. Lightly re-solder the bridged portion.**

**2. Remove the remaining solder along pins using a soldering iron as shown in the figure below.**




# 12. CABINET AND ELECTRICAL PARTS LOCATION

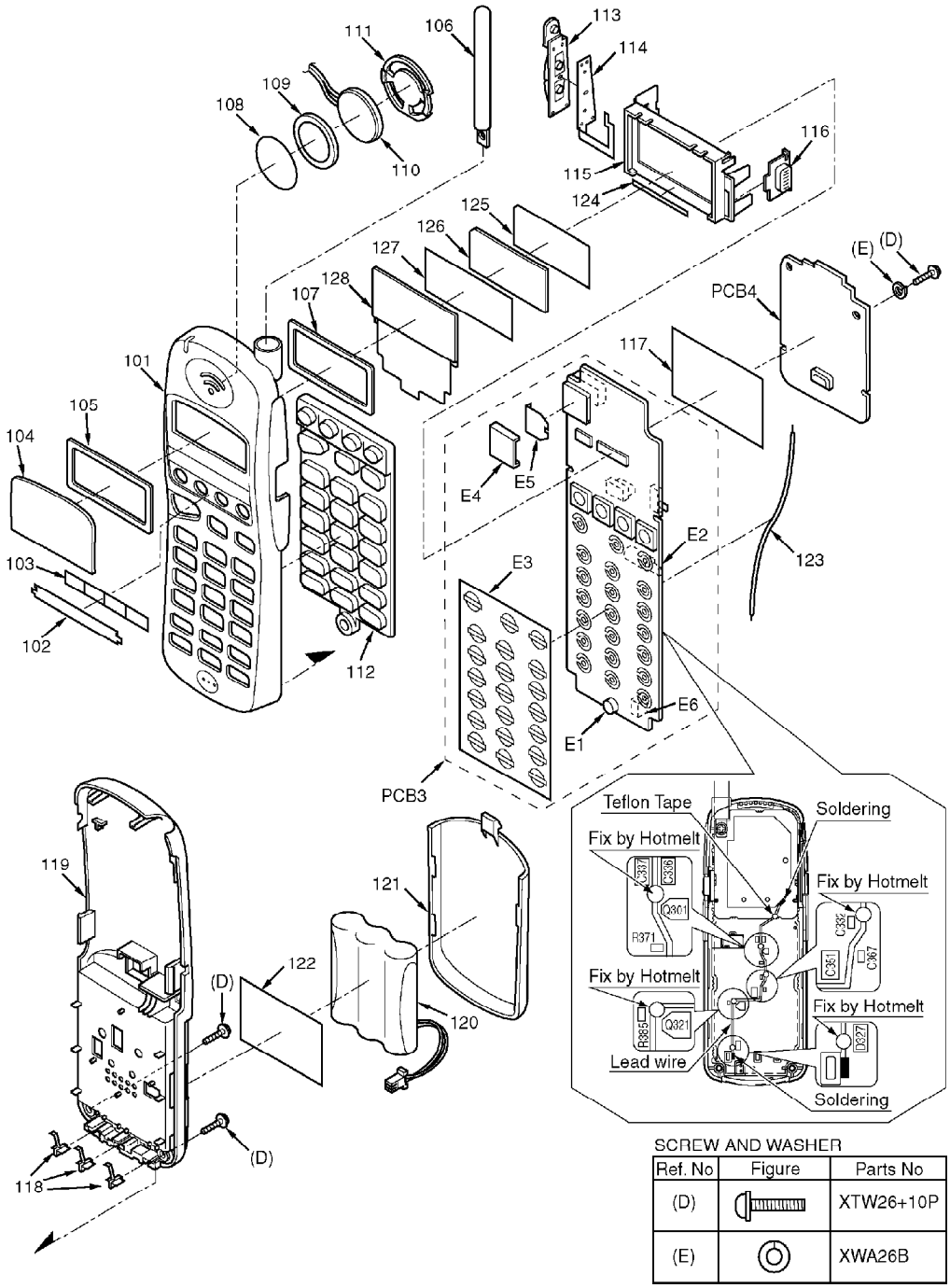
## 12.1. BASE UNIT




SCREWS

| Ref. No | Figure | Parts No |
|---|---|---|
| (A) | | XTW3+S16P |
| (B) | | XTW26+10P |
| (C) | | XTW3+S10P |

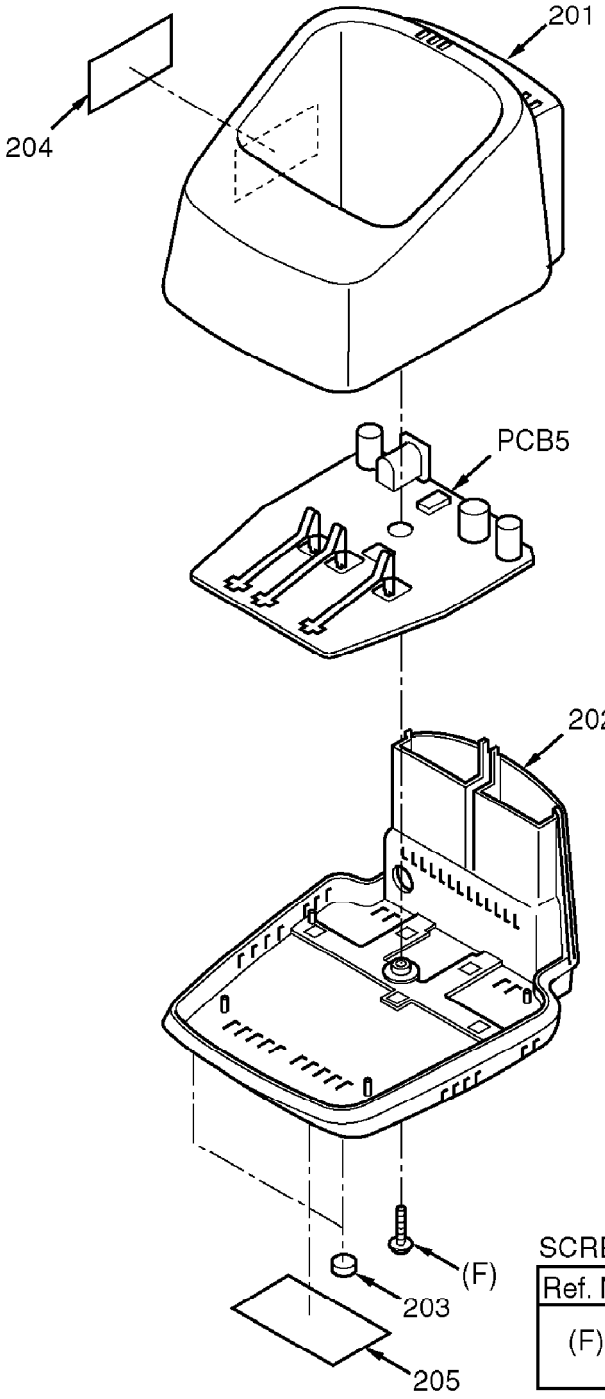
## 12.2. HANDSET



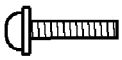

SCREW AND WASHER

| Ref. No | Figure | Parts No |
|---|---|---|
| (D) | | XTW26+10P |
| (E) | | XWA26B |

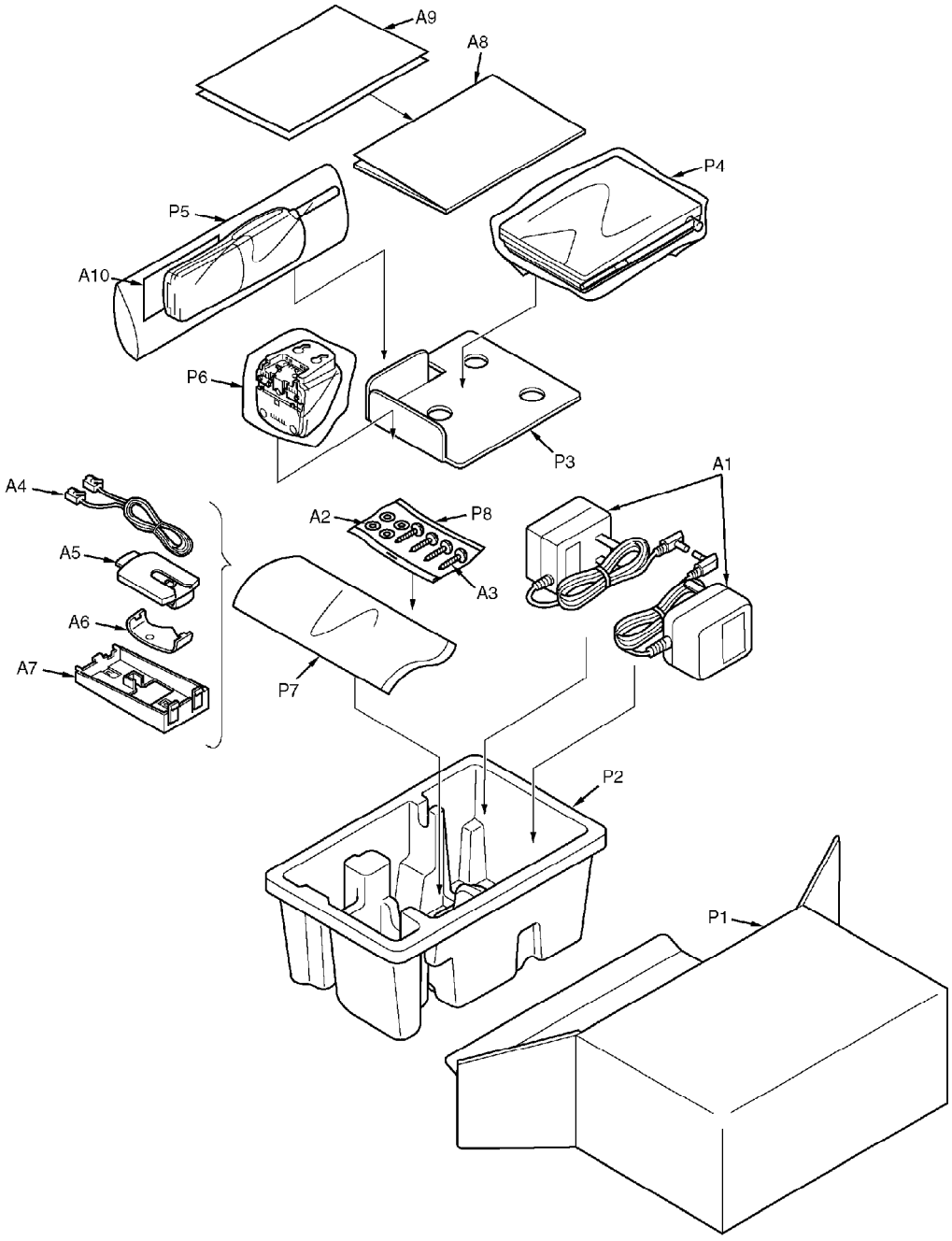
## 12.3. CHARGER




SCREW

| Ref. No | Figure | Parts No |
|---|---|---|
| (F) |  | XTW26+10P |

# 13. ACCESSORIES AND PACKING MATERIALS




# 14. REPLACEMENT PARTS LIST

**Note:**

**1. RTL (Retention Time Limited)**

**The marking (RTL) indicates that the Retention Time is limited for this item.**

**After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly**

**and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.**

2. **Important safety notice**
   **Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.**
3. **The S mark indicates service standard parts and may differ from production parts.**
4. **RESISTORS & CAPACITORS**
   **Unless otherwise specified;**
   **All resistors are in ohms ( Ω ) K=1000 Ω , M=1000k Ω**
   **All capacitors are in MICRO FARADS ( μ F),P= μ ( μ F)**
   ***Type & Wattage of Resistor**

Type

| | | |
|---|---|---|
| ERC:Solid<br>ERD:Carbon<br>PQRD:Carbon | ERX:Metal Film<br>ERG:Metal Oxide<br>ER0:Metal Film | PQ4R:Carbon<br>ERS:Fusible Resistor<br>ERF:Cement Resistor |

Wattage

| | | | | | |
|---|---|---|---|---|---|
| 10,16:1/8W | 14,25:1/4W | 12:1/2W | 1:1W | 2:2W | 3:3W |

*Type & Voltage of Capacitor

Type

| | |
|---|---|
| ECFD:Semi-Conductor<br>ECQS:Styrol<br>PQCUV:Chip<br>ECQMS:Mica | ECCD,ECKD,ECBT,PQCBC:Ceramic<br>ECQE,ECQV,ECQG:Polyester<br>ECEA,ECSZ:Electlytic<br>ECQP:Polypropylene |

Voltage

| ECQ Type | ECQG<br>ECQV Type | ECSZ Type | Others | |
|---|---|---|---|---|
| 1H:50V<br>2A:100V<br>2E:250V<br>2H:500V | 05:50V<br>1:100V<br>2:200V | 0F:3.15V<br>1A:10V<br>1V:35V<br>0J:6.3V | 0J :6.3V<br>1A :10V<br>1C :16V<br>1E,25:25V | 1V :35V<br>50,1H:50V<br>1J :63V<br>2A :100V |

## 14.1. BASE UNIT

### 14.1.1. CABINET AND ELECTRICAL PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 1 | PSKM1077Z1 | CABINET,TOP | S |
| 2 | PSGP1065Z1 | PANEL,LED | S |
| 3 | PSBC1024Z1 | BUTTON,LOCATE | S |
| 4 | PSSA1022Z | ANTENNA | |
| 5 | PSYF1006X1 | CABINET,BOTTOM | S |
| 5-1 | PQHG10203Z | RUBBER PARTS,LEGS | |
| 6 | PSHR1217Z | COVER,RF | |
| 7 | PSQT1643Z | LABEL,FCC CAUTION | |
| 8 | PQHR5397Z | COVER,ID | S |
| 9 | PSGT2057Z | NAME PLATE | |

### 14.1.2. MAIN BOARD

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB1 | PSWP1TD7894M | MAIN BOARD ASS'Y(RTL) | |
| | | | |
| | | (ICS) | |
| IC100 | PSVIXC612812 | IC | |
| IC101 | PQVIC61CC32N | IC | |
| IC102 | AN6183S | IC | |
| IC103 | C3EBDG000024 | IC | |
| IC104 | PQVIPD4011G | IC | |
| IC105 | MN150409KRP | IC | |
| IC106 | PSVIML7029MB | IC | |
| IC107 | PSWITD7895H | IC | |
| IC110 | C0CBACE00012 | IC | |
| IC112 | PQVITC7S08FR | IC | S |
| IC113 | PQVITC7S32FR | IC | S |
| IC251 | PQVIMC34063M | IC | S |
| | | | |
| | | (TRANSISTORS) | |
| Q100 | 2SA1625 | TRANSISTOR(SI) | S |
| Q101 | 2SD1994A | TRANSISTOR(SI) | |
| Q102 | 2SC4116 | TRANSISTOR(SI) | S |
| Q103 | 2SD601R | TRANSISTOR(SI) | |
| Q104 | 2SD601R | TRANSISTOR(SI) | |
| Q105 | 2SB1218A | TRANSISTOR(SI) | |
| Q106 | 2SC4116 | TRANSISTOR(SI) | S |
| Q107 | PQVT2N6517CA | TRANSISTOR(SI) | S |
| Q108 | 2SC2120 | TRANSISTOR(SI) | S |
| Q109 | 2SC4116 | TRANSISTOR(SI) | S |
| Q115 | 2SD1819A | TRANSISTOR(SI) | |
| Q117 | B1GDCFGA0008 | TRANSISTOR(SI) | |
| Q118 | UN5113 | TRANSISTOR(SI) | S |
| Q261 | 2SD1664Q | TRANSISTOR(SI) | S |
| | | | |
| | | (DIODES) | |
| D101 | PQVDS1ZB60F1 | DIODE(SI) | S |
| D102 | MA8082L | DIODE(SI) | |
| D104 | PQVDS1ZB60F1 | DIODE(SI) | S |
| D105 | PSVDZ345A09T | LED | S |
| D106 | PSVDZ845A09T | LED | S |
| D108 | PQVDS5688G | DIODE(SI) | S |
| D109 | MA110 | DIODE(SI) | |
| D112 | MA110 | DIODE(SI) | |
| D113 | MA110 | DIODE(SI) | |
| D114 | MA110 | DIODE(SI) | |
| D115 | MA110 | DIODE(SI) | |
| D119 | MA4180 | DIODE(SI) | |
| D125 | MA738 | DIODE(SI) | |
| D261 | MA8043 | DIODE(SI) | |
| | | | |
| | | (CONNECTOR AND JACKS) | |
| CN102 | AXK6S20545P | CONNECTOR | |
| CN103 | PSJJ1B002Z | JACK | S |
| CN104 | K2LB104B0031 | JACK | ⚠ |
| | | | |
| | | (CAPACITORS) | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C100 | ECQE2224KF | 0.22 | |
| C101 | ECKD2H681KB | 680p | S |
| C102 | ECKD2H681KB | 680p | S |
| C103 | ECEA1HU3R3 | 3.3 | |
| C104 | ECUV1C224KBV | 0.22 | S |
| C106 | ECEA1EK470 | 47 | S |
| C107 | ECUV1H101JCV | 100p | |
| C109 | ECUV1C224KBV | 0.22 | S |
| C110 | ECUV1C104KBV | 0.1 | |
| C111 | ECUV1H330JCV | 33p | |
| C112 | ECEA1EU221 | 220 | |
| C113 | ECEA1CGE470 | 47 | |
| C114 | ECUV1A105ZFV | 1 | S |
| C115 | ECEA1CU331 | 330 | |
| C117 | F4D551040010 | 0.1F | |
| C118 | ECUV1C104KBV | 0.1 | |
| C120 | ECEA1HU2R2 | 2.2 | |
| C121 | ECUV1H151JCV | 150p | |
| C122 | ECST1CY105 | 1 | |
| C123 | ECUV1C104KBV | 0.1 | |
| C124 | ECEA1CK101 | 100 | S |
| C125 | ECUV1C104KBV | 0.1 | |
| C126 | ECUV1H330JCV | 33p | |
| C127 | PQCUV1C104ZF | 0.1 | S |
| C128 | ECUV1H330JCV | 33p | |
| C129 | ECUV1H330JCV | 33p | |
| C130 | ECUV1H330JCV | 33p | |
| C131 | ECUV1C104KBV | 0.1 | |
| C132 | ECUV1H330JCV | 33p | |
| C141 | ECUV1H472KBV | 0.0047 | |
| C143 | PQCUV1C104ZF | 0.1 | S |
| C144 | ECUV1H180JCV | 18p | |
| C145 | ECUV1H180JCV | 18p | |
| C147 | ECUV1C393KBV | 0.039 | |
| C148 | ECST0JY106 | 10 | |
| C149 | ECST0JY106 | 10 | |
| C150 | ECEA1CK101 | 100 | S |
| C151 | PQCUV1C104ZF | 0.1 | S |
| C153 | ECUV1C104ZFV | 0.1 | S |
| C154 | PQCUV1C104ZF | 0.1 | S |
| C155 | ECUV1H100DCV | 10p | S |
| C156 | ECUV1H100DCV | 10p | S |
| C159 | ECUV1C104KBV | 0.1 | |
| C160 | ECUV1H330JCV | 33p | |
| C161 | ECUV1H330JCV | 33p | |
| C162 | ECUV1C104KBV | 0.1 | |
| C163 | ECUV1H330JCV | 33p | |
| C164 | ECEA1HU100 | 10 | S |
| C165 | ECUV1A105ZFV | 1 | S |
| C167 | ECUV1H330JCV | 33p | |
| C168 | ECUV1H330JCV | 33p | |
| C169 | ECUV1H221JCV | 220p | |
| C171 | ECUV1A105ZFV | 1 | S |
| C172 | ECUV1A105ZFV | 1 | S |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C174 | ECUV1A105ZFV | 1 | S |
| C176 | ECUV1A105ZFV | 1 | S |
| C178 | ECUV1H103KBV | 0.01 | |
| C179 | ECEA1EKA100 | 10 | |
| C181 | ECUV1H101JCV | 100p | |
| C182 | ECUV1H103KBV | 0.01 | |
| C183 | ECUV1C683KBV | 0.068 | |
| C184 | ECEA1CKS100 | 10 | S |
| C186 | ECUV1E393KBV | 0.039 | |
| C187 | ECUV1C104KBV | 0.1 | |
| C188 | PQCUV1C104ZF | 0.1 | S |
| C189 | PQCUV1C104ZF | 0.1 | S |
| C191 | ECUV1H152KBV | 0.0015 | |
| C192 | ECUV1H103KBV | 0.01 | |
| C194 | ERJ34EYJ181 | 180(RESISTOR) | |
| C198 | ECUV1C474ZFV | 0.47 | |
| C199 | ECUV1A105ZFV | 1 | S |
| C200 | ECUV1A105ZFV | 1 | S |
| C201 | ECUV1A105ZFV | 1 | S |
| C202 | ECUV1A105ZFV | 1 | S |
| C204 | ECUV1A105ZFV | 1 | S |
| C205 | ECUV1A105ZFV | 1 | S |
| C212 | ECUV1H470JCV | 47p | |
| C215 | PQCUV1C104ZF | 0.1 | S |
| C216 | ECUV1H470JCV | 47p | |
| C217 | ECUV1H470JCV | 47p | |
| C219 | ECUV1H470JCV | 47p | |
| C220 | ECUV1H470JCV | 47p | |
| C223 | PQCUV1C104ZF | 0.1 | S |
| C227 | ECUV1H470JCV | 47p | |
| C234 | ECUV1H103KBV | 0.01 | |
| C237 | ECUV1A105ZFV | 1 | S |
| C251 | ECUV1H221JCV | 220p | |
| C252 | EEUFC1C221 | 220p | |
| C261 | ECST0JX336 | 33 | |
| | | | |
| | | (RESISTORS) | |
| R100 | ERDS2TJ473 | 47k | S |
| R101 | PQ4R10XJ560 | 56 | S |
| R102 | ERJ3GEYJ472 | 4.7k | |
| R103 | ERJ3GEYJ684 | 680k | |
| R104 | ERJ3GEYJ271 | 270 | |
| R105 | ERJ3GEYJ103 | 10k | |
| R106 | ERJ3GEYJ103 | 10k | |
| R107 | ERJ3GEYJ332 | 3.3k | |
| R108 | ERJ3GEYJ684 | 680k | |
| R109 | ERJ3GEYJ221 | 220 | |
| R110 | PQ4R10XJ102 | 1k | S |
| R111 | ERJ3GEYJ472 | 4.7k | |
| R112 | ERJ3GEYJ472 | 4.7k | |
| R113 | PQ4R10XJ101 | 100 | S |
| R114 | ERJ3GEYJ222 | 2.2k | |
| R115 | ERJ3GEYJ472 | 4.7k | |
| R116 | PQ4R10XJ102 | 1k | S |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R117 | ERJ3GEYJ103 | 10k | |
| R118 | ERJ3GEYJ103 | 10k | |
| R119 | ERJ3GEYJ103 | 10k | |
| R120 | ERJ3GEY0R00 | 0 | |
| R121 | ERJ3GEYJ103 | 10k | |
| R122 | ERJ3GEYJ473 | 47k | |
| R123 | ERJ3GEYJ104 | 100k | |
| R125 | ERJ3GEYJ103 | 10k | |
| R126 | ERJ3GEYJ101 | 100 | |
| R127 | ERJ3GEYJ154 | 150k | |
| R128 | ERJ3GEYJ472 | 4.7k | |
| R129 | ERJ3GEYJ101 | 100 | |
| R130 | ERJ3GEYJ153 | 15k | |
| R132 | PQ4R10XJ681 | 680 | S |
| R134 | ERJ3GEYJ473 | 47k | |
| R137 | ERJ3GEYJ104 | 100k | |
| R140 | ERJ3GEYJ104 | 100k | |
| R141 | ERJ3GEYJ104 | 100k | |
| R142 | ERJ3GEYJ473 | 47k | |
| R143 | ERJ3GEYJ153 | 15k | |
| R146 | ERJ3GEYJ473 | 47k | |
| R148 | ERJ3GEYJ103 | 10k | |
| R152 | ERJ3GEYJ224 | 220k | |
| R153 | ERJ3GEYJ472 | 4.7k | |
| R154 | ERJ3GEYJ105 | 1M | |
| R159 | ERJ3GEYJ100 | 10 | |
| R160 | ERJ3GEYJ105 | 1M | |
| R161 | ERDS2TJ122 | 1.2k | S |
| R165 | ERJ3GEYJ102 | 1k | |
| R166 | ERJ3GEYJ104 | 100k | |
| R168 | ERJ3GEYJ101 | 100 | |
| R169 | ERJ3GEYJ222 | 2.2k | |
| R170 | PQ4R10XJ221 | 220 | S |
| R171 | PQ4R10XJ221 | 220 | S |
| R172 | ERDS2TJ122 | 1.2k | S |
| R173 | ERJ3GEYJ104 | 100k | |
| R175 | ERJ3GEYJ103 | 10k | |
| R176 | ERJ3GEYJ103 | 10k | |
| R177 | ERJ3GEYJ473 | 47k | |
| R178 | ERJ3GEYJ153 | 15k | |
| R179 | ERJ3GEYJ222 | 2.2k | |
| R180 | ERDS1TJ330 | 33 | S |
| R183 | ERJ3GEYJ393 | 39k | |
| R184 | ERJ3GEYJ470 | 47 | |
| R186 | ERJ3GEYJ152 | 1.5k | |
| R187 | ERJ3GEYJ332 | 3.3k | |
| R191 | ERJ3GEYJ105 | 1M | |
| R192 | ERJ3GEYJ105 | 1M | |
| R193 | ERJ3GEYJ472 | 4.7k | |
| R194 | ERJ3GEYJ473 | 47k | |
| R195 | ERJ3GEYJ473 | 47k | |
| R199 | ERJ3GEYJ104 | 100k | |
| R200 | ERJ3GEYJ104 | 100k | |
| R201 | ERJ3GEYJ104 | 100k | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R202 | ERJ3GEYJ183 | 18k | |
| R212 | ERJ3GEY0R00 | 0 | |
| R215 | ERJ3GEYJ104 | 100k | |
| R217 | ERJ3GEYJ682 | 6.8k | |
| R220 | ERJ3GEYJ103 | 10k | |
| R226 | ERJ3GEY0R00 | 0 | |
| R231 | ERJ3GEYJ471 | 470 | |
| R234 | ERJ3GEY0R00 | 0 | |
| R236 | ERJ3GEY0R00 | 0 | |
| R239 | ERJ3GEY0R00 | 0 | |
| R241 | ERJ3GEYJ104 | 100k | |
| R242 | ERJ3GEYJ560 | 56 | |
| R251 | ERJ3GEYJ1R0 | 1 | |
| R252 | ERJ3GEYJ1R0 | 1 | |
| R253 | ERJ3GEYJ1R0 | 1 | |
| R254 | ERJ3GEYF104 | 100k | S |
| R255 | ERJ3GEYF333 | 33k | S |
| R256 | ERJ3GEYJ102 | 1k | |
| R261 | ERJ3GEYJ101 | 100 | |
| R262 | ERJ3GEY0R00 | 0 | |
| R270 | ERJ3GEYJ104 | 100k | |
| R271 | ERJ3GEYJ104 | 100k | |
| | | | |
| | | (COILS) | |
| L100 | PQLE106 | COIL | S |
| L101 | PQLE106 | COIL | S |
| L102 | PQLQXF330K | COIL | S |
| L103 | PQLQXF330K | COIL | S |
| L104 | G1D330000001 | COIL | |
| | | | |
| | | (VARISTORS) | |
| SA100 | PQVDDSS301L | VARISTOR(SURGE ABSORBER) | S |
| SA101 | PQVDDSS301L | VARISTOR(SURGE ABSORBER) | S |
| | | | |
| ZR100 | PSVDNV039D5 | VARISTOR | S |
| ZR101 | PSVDNV039D5 | VARISTOR | S |
| | | | |
| | | (SWITCHS) | |
| SW100 | PQSS2A27Z | SWITCH | S |
| SW101 | PQSS2A27Z | SWITCH | S |
| SW102 | EVQQJJ05Q | SWITCH | S |
| SW107 | EVQQJJ05Q | SWITCH | S |
| | | | |
| | | (TRANSFORMER) | |
| T100 | ETE13K79AY | TRANSFORMER | |
| | | | |
| | | (CRYSTAL OSCILLATORS) | |
| X100 | H0J103500007 | CRYSTAL OSCILLATOR | |
| X102 | PQVCJ3581N9Z | CRYSTAL OSCILLATOR | S |
| | | | |
| | | (THERMISTOR) | |
| P100 | PQRPAR390N | THERMISTOR | S |
| | | | |
| | | (PHOTO ELECTRIC TRANSDUCER) | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PC100 | PQVIPC814K | PHOTO COUPLER | S |
| | | | |

## 14.1.3. RF UNIT

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB2 | PSWP2TD7894M | RF UNIT PARTS ASS'Y(RTL) | |
| | | | |
| | | (IC) | |
| IC501 | PQVILXT810TC | IC | |
| | | | |
| | | (CONNECTOR) | |
| CN501 | K1KB20A00032 | CONNECTOR,20P | |
| | | | |
| | | (CAPACITORS) | |
| C501 | ECUV1H090DCV | 9p | S |
| C502 | ECUV1H090DCV | 9p | S |
| C503 | PQCUV1C104ZF | 0.1 | S |
| C504 | PQCUV1C104ZF | 0.1 | S |
| C505 | ECUV1H220JCV | 22p | |
| C506 | ECST0JY226 | 22 | |
| C507 | PQCUV1C104ZF | 0.1 | S |
| C508 | ECUV1H220JCV | 22p | |
| C509 | ECUV1H220JCV | 22p | |
| C510 | ECUV1H101JCV | 100p | |
| C511 | ECUV1H220JCV | 22p | |
| C512 | ECUV1H223KBV | 0.022 | S |
| C513 | PQCUV1C104ZF | 0.1 | S |
| C514 | ECUV1H220JCV | 22p | |
| C515 | PQCUV1C104ZF | 0.1 | S |
| C516 | ECUV1H101JCV | 100p | |
| C517 | ECUV1H680JCV | 68p | |
| C518 | ECUV1H120JCV | 12p | |
| C519 | ECUV1H220JCV | 22p | |
| C520 | PQCUV1C104ZF | 0.1 | S |
| C521 | ECST0JY226 | 22 | |
| C522 | ECUV1H101JCV | 100p | |
| C524 | ECUV1H101JCV | 100p | |
| C525 | ECUV1H101JCV | 100p | |
| C526 | ECUV1H103KBV | 0.01 | |
| C527 | ECUV1H101JCV | 100p | |
| C528 | ECUV1H101JCV | 100p | |
| C530 | ECUV1H101JCV | 100p | |
| C531 | ECUV1H101JCV | 100p | |
| C532 | ECUV1H101JCV | 100p | |
| C533 | ECUV1H101JCV | 100p | |
| C534 | ECUV1H101JCV | 100p | |
| C535 | PQCUV1C104ZF | 0.1 | S |
| C536 | ECUV1H050CCV | 5p | |
| | | | |
| | | (RESISITORS) | |
| R501 | ERJ3GEYF153 | 15k | S |
| R502 | ERJ3GEYJ103 | 10k | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R503 | ERJ3GEYJ332 | 3.3k | |
| R504 | D0GB224ZA002 | 220k | |
| R505 | MQLRE1N0DF2 | COIL | |
| R522 | ERJ3GEYJ104 | 100k | S |
| | | | |
| | | (COILS) | |
| L502 | MQLRE5N6JF2 | COIL | |
| L504 | MQLRE47NJF2 | COIL | |
| L505 | MQLRE47NJF2 | COIL | |
| L506 | ECUV1H010CCV | 1P(CAPACITOR) | |
| L507 | MQLRE22NJF2 | COIL | |
| | | | |
| | | | |
| | | (CERAMIC FILTER) | |
| FIL501 | J0D9156B0002 | CERAMIC FILTER | |
| | | | |
| | | (TRANSFORMER) | |
| T501 | J2GE00000008 | TRANSFORMER | |
| | | | |
| | | (CRYSTAL OSCILLATOR) | |
| X501 | H0J240500009 | CRYSTAL OSCILLATOR | |
| | | | |

# 14.2. HANDSET

## 14.2.1. CABINET AND ELECTRICAL PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 101 | PSYM1031Z1 | CABINET,FRONT | S |
| 102 | PSGV1003Z | COVER(FOR TEL CARD) | |
| 103 | PSGD1058Y | CARD,TEL | |
| 104 | PSGP1064Y1 | PANEL,LCD | S |
| 105 | PSHE1105Z | SPACER(FOR PANEL,LCD) | |
| 106 | N1CA9GA00002 | ANTENNA | |
| 107 | PSHE1104Z | SPACER (FOR LCD) | |
| 108 | PQHS10195Z | NET,SPEAKER | |
| 109 | PSHG1208Z | RUBBER PARTS,SPEAKER | |
| 110 | PSAX20P03Z | SPEAKER | S |
| 111 | PSHR1216Z | COVER,SPEAKER | |
| 112 | PSBX1083Y | BUTTON,12KEY | |
| 113 | PSBX1082Z1 | BUTTON,VOLUME | S |
| 114 | PSSE1021Z | KEYBOARD SW(SHEET SW) | S |
| 115 | PSHR1215Z | GUIDE,LCD | |
| 116 | PSBD1010Z1 | KNOB,POWER | S |
| 117 | PSMC1098Z | MAGNETIC SHIELD | |
| 118 | PSJT1037Z | TERMINAL,CHARGE | |
| 119 | PSKF1050Z1 | CABINET,REAR | S |
| 120 | PSPT3HRAAU41 | BATTERY | |
| 121 | PSKK1033Z1 | LID,BATTERY | S |
| 122 | PSGT2056Z | NAME PLATE | |
| 123 | YC10Z | LEAD WIRE | |
| 124 | PSHE1018Z | TAPE,BOTH SIDE(LCD) | |
| 125 | PSHX1163Z | COVER | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 126 | PSHR1219Z | SPACER | |
| 127 | PSHX1164Z | COVER | |
| 128 | LNY162C03F | LCD | |

## 14.2.2. MAIN BOARD

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB3 | PSWP2TD7895M | MAIN BOARD PARTS ASS'Y(RTL) | |
| | | | |
| | | (ICS) | |
| IC301 | PSVIRN5RF30B | IC | |
| IC302 | PQVINJM2135V | IC | S |
| IC303 | PSVIML7029MB | IC | |
| IC304 | C0EBF0000063 | IC | |
| IC305 | PSVIRN5RF30B | IC | |
| IC307 | PSWITD7895R | IC | |
| IC308 | C0DBZGC00044 | IC | |
| IC309 | C0JBAA000104 | IC | |
| IC310 | C3EBDG000024 | IC | |
| IC311 | C0JBAE000098 | IC | |
| IC312 | PQVITC7SU04F | IC | S |
| IC313 | PQVITC7S04FR | IC | S |
| IC314 | PQVIXC3002MR | IC | S |
| | | | |
| | | (TRANSISTORS) | |
| Q300 | 2SB1218A | TRANSISTOR(SI) | |
| Q301 | 2SC4617R | TRANSISTOR(SI) | S |
| Q302 | UN5216 | TRANSISTOR(SI) | |
| Q304 | UN5213 | TRANSISTOR(SI) | S |
| Q305 | B1GBHBEA0003 | TRANSISTOR(SI) | |
| Q306 | B1ADNF000001 | TRANSISTOR(SI) | |
| Q307 | PQVTFB1L2Q | TRANSISTOR(SI) | S |
| Q308 | UN5113 | TRANSISTOR(SI) | S |
| Q309 | 2SC4116 | TRANSISTOR(SI) | S |
| Q310 | 2SC4617R | TRANSISTOR(SI) | S |
| Q311 | PQVTFB1L2Q | TRANSISTOR(SI) | S |
| Q312 | UN5113 | TRANSISTOR(SI) | S |
| Q313 | UN521 | TRANSISTOR(SI) | S |
| Q314 | UN521 | TRANSISTOR(SI) | S |
| Q315 | UN521 | TRANSISTOR(SI) | S |
| Q316 | UN521 | TRANSISTOR(SI) | S |
| Q317 | UN521 | TRANSISTOR(SI) | S |
| Q318 | UN521 | TRANSISTOR(SI) | S |
| Q319 | UN521 | TRANSISTOR(SI) | S |
| Q320 | UN521 | TRANSISTOR(SI) | S |
| Q321 | B1ADNF000001 | TRANSISTOR(SI) | |
| | | | |
| | | (DIODES) | |
| D300 | LNJ310M6URA | LED | |
| D301 | LNJ308G8JRA | LED | |
| D302 | LNJ308G8JRA | LED | |
| D303 | LNJ308G8JRA | LED | |
| D304 | LNJ308G8JRA | LED | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| D305 | LNJ308G8JRA | LED | |
| D306 | LNJ308G8JRA | LED | |
| D307 | LNJ308G8JRA | LED | |
| D308 | LNJ308G8JRA | LED | |
| D309 | LNJ308G8JRA | LED | |
| D311 | PQVDRB751H4 | DIODE(SI) | |
| D312 | LNJ308G8JRA | LED | |
| D313 | LNJ308G8JRA | LED | |
| D314 | PSVDLS22BB1U | DIODE(SI) | S |
| D315 | PSVDLS22BB1U | DIODE(SI) | S |
| D316 | PSVDLS22BB1U | DIODE(SI) | S |
| D317 | PSVDLS22BB1U | DIODE(SI) | S |
| D318 | LNJ115W8PRA | DIODE(SI) | |
| D319 | LNJ115W8PRA | DIODE(SI) | |
| D322 | MA8150M | DIODE(SI) | |
| D324 | MA110 | DIODE(SI) | |
| D325 | ERJ3GEYJ104 | 100k (RESISTOR) | |
| D326 | ERJ3GEYJ104 | 100k (RESISTOR) | |
| D327 | PSVDEC2QS3L | DIODE(SI) | S |
| | | | |
| | | (CONNECTOR AND JACK) | |
| CN301 | K1MN20B00072 | CONNECTOR,20P | S |
| CN302 | K1KA20A00138 | CONNECTOR,20P | S |
| CN303 | PSJS04A62Z | CONNECTOR,4P | S |
| JK300 | PQJJ1J007Z | JACK | S |
| | | | |
| | | (CAPACITORS) | |
| C301 | ECUV1H330JCV | 33p | |
| C302 | ECUV1H330JCV | 33p | |
| C303 | PQCUV1C104ZF | 0.1 | S |
| C308 | ECST0JY226 | 22 | |
| C309 | ECUV1H102KBV | 1000p | |
| C310 | ECUV1C104KBV | 0.1 | |
| C311 | ECUV1C104KBV | 0.1 | |
| C312 | ECUV1C473KBV | 0.047 | |
| C313 | ECUV1C473KBV | 0.047 | |
| C314 | ECUV1C473KBV | 0.047 | |
| C315 | ECUV1C473KBV | 0.047 | |
| C316 | ECUV1C473KBV | 0.047 | |
| C317 | ECUV1A105ZFV | 1 | S |
| C318 | ECUV1A105ZFV | 1 | S |
| C319 | ECUV1A105ZFV | 1 | S |
| C320 | ECUV1A105ZFV | 1 | S |
| C321 | ECUV1A105ZFV | 1 | S |
| C322 | ECST0JY226 | 22 | |
| C324 | PQCUV1C104ZF | 0.1 | S |
| C325 | F3G0G1070002 | 100 | |
| C327 | PQCUV1C104ZF | 0.1 | S |
| C328 | PQCUV1C104ZF | 0.1 | S |
| C329 | F3F0J225A003 | 2.2 | |
| C330 | ECUV1H682KBV | 0.0068 | |
| C332 | ECUV1H220JCV | 22p | |
| C333 | F3F0J225A003 | 2.2 | |
| C334 | ECUV1A105ZFV | 1 | S |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C335 | ECUV1A105ZFV | 1 | S |
| C336 | ECST0JY106 | 10 | |
| C337 | ECST0JY106 | 10 | |
| C338 | ECUV1A105ZFV | 1 | S |
| C340 | PQCUV1C104ZF | 0.1 | S |
| C341 | ECUV1C473KBV | 47000P | |
| C342 | F3G0G1070002 | 100 | |
| C343 | ERJ3GEYJ103 | 10k (RESISTOR) | |
| C344 | ECUV1H100DCV | 10p | S |
| C345 | ECUV1H100DCV | 10p | S |
| C348 | ECUV1H220JCV | 22p | |
| C349 | ECUV1H220JCV | 22p | |
| C350 | PQCUV1C104ZF | 0.1 | S |
| C351 | F3G0G1070002 | 100 | |
| C355 | PQCUV1C104ZF | 0.1 | S |
| C356 | F3G0G1070002 | 100 | |
| C357 | ECUV1H103KBV | 0.01 | |
| C358 | ECUV1A105ZFV | 1 | S |
| C360 | ECUV1A105ZFV | 1 | S |
| C361 | PQCUV1C104ZF | 0.1 | S |
| C363 | ECUV1H470JCV | 47p | |
| C364 | ECUV1H470JCV | 47p | |
| C366 | ECUV1H470JCV | 47p | |
| C367 | ECUV1H470JCV | 47p | |
| C368 | ECUV1H470JCV | 47p | |
| C369 | PQCUV1C104ZF | 0.1 | S |
| C370 | ERJ3GEY0R00 | 0 (RESISTOR) | |
| C372 | ECUV1H470JCV | 47p | |
| C373 | ECUV1H470JCV | 47p | |
| C374 | ERJ3GEY0R00 | 0 (RESISTOR) | |
| C375 | ECUV1H330JCV | 33p | |
| C376 | ECUV1H330JCV | 33p | |
| C378 | ECUV1H470JCV | 47p | |
| C381 | ECUV1A105ZFV | 1 | S |
| C382 | ECUV1A105ZFV | 1 | S |
| C384 | PQCUV1C104ZF | 0.1 | S |
| C385 | PQCUV1C104ZF | 0.1 | S |
| C386 | PQCUV1C104ZF | 0.1 | S |
| C387 | PQCUV1C104ZF | 0.1 | S |
| C388 | PQCUV1C104ZF | 0.1 | S |
| | | | |
| | | (RESISITORS) | |
| R300 | PQ4R10XJ150 | 15 | S |
| R303 | ERJ3GEYJ221 | 220 | |
| R304 | ERJ3GEYJ472 | 4.7k | |
| R305 | ERJ3GEYJ470 | 47 | |
| R311 | ERJ3GEYJ473 | 47k | |
| R312 | ERJ3GEY0R00 | 0 | |
| R313 | ERJ3GEYJ122 | 1.2k | |
| R314 | PQ4R10XJ470 | 47 | S |
| R315 | ERJ3GEYJ102 | 1k | |
| R316 | ERJ3GEYJ101 | 100 | |
| R317 | ERJ3GEYJ391 | 390 | |
| R318 | ERJ3GEYJ101 | 100 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R319 | ERJ3GEYJ391 | 390 | |
| R320 | ERJ3GEYJ101 | 100 | |
| R321 | ERJ3GEYJ391 | 390 | |
| R322 | ERJ3GEYJ101 | 100 | |
| R323 | ERJ3GEYJ391 | 390 | |
| R324 | PQ4R10XJ220 | 22 | |
| R325 | ERJ3GEYJ104 | 100k | |
| R326 | ERJ3GEYJ274 | 270k | |
| R327 | ERJ3GEYJ182 | 1.8k | |
| R328 | ERJ3GEYJ474 | 470k | |
| R329 | ERJ3GEYF204 | 200k | S |
| R330 | ERJ3GEYF304 | 300k | S |
| R331 | ERJ3GEYF204 | 200k | S |
| R332 | ERJ3GEYJ104 | 100k | |
| R333 | ERJ3GEYJ103 | 10k | |
| R335 | ERJ3GEYJ104 | 100k | |
| R336 | ERJ3GEYJ104 | 100k | |
| R337 | ERJ3GEYJ222 | 2.2k | |
| R338 | ERJ3GEYJ104 | 100k | |
| R339 | ERJ3GEYJ104 | 100k | |
| R340 | ERJ3GEYJ104 | 100k | |
| R342 | ERJ3GEYJ224 | 220k | |
| R345 | ERJ3GEYJ473 | 47k | |
| R346 | ERJ3GEYJ822 | 8.2k | |
| R348 | ERJ3GEYJ104 | 100k | |
| R349 | ERJ3GEYJ104 | 100k | |
| R351 | ERJ3GEYJ272 | 2.7k | |
| R352 | ERJ3GEYJ105 | 1M | |
| R353 | ERJ3GEYJ560 | 56 | |
| R354 | ERJ3GEYJ331 | 330 | |
| R356 | ERJ3GEYJ102 | 1k | |
| R357 | ERJ3GEYJ104 | 100k | |
| R359 | ERJ3GEYJ104 | 100k | |
| R360 | ERJ3GEYJ104 | 100k | |
| R361 | ERJ3GEYJ105 | 1M | |
| R362 | ERJ3GEYJ106 | 10M | |
| R365 | ERJ3GEYJ473 | 47k | |
| R366 | ERJ3GEYJ104 | 100k | |
| R367 | ERJ3GEYJ104 | 100k | |
| R368 | ERJ3GEYJ334 | 330k | |
| R369 | ERJ3GEYJ104 | 100k | |
| R370 | ERJ3GEYJ104 | 100k | |
| R371 | ERJ3GEYJ104 | 100k | |
| R373 | ERJ3GEYJ104 | 100k | |
| R374 | ERJ3GEYJ104 | 100k | |
| R375 | ERJ3GEYJ560 | 56 | |
| R376 | ERJ3GEYJ331 | 330 | |
| R378 | ERJ3GEYJ473 | 47k | |
| R379 | ERJ3GEYJ102 | 1k | |
| R384 | ERJ3GEYJ122 | 1.2k | |
| R385 | ERJ3GEYJ473 | 47k | |
| R386 | ERJ3GEYJ473 | 47k | |
| R387 | ERJ3GEYJ104 | 100k | |
| R388 | ERJ3GEYJ471 | 470 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R389 | ERJ3GEYJ104 | 100k | |
| R390 | PQLQR1RS241T | COIL | S |
| R391 | ERJ3GEYJ101 | 100 | |
| R392 | ERJ3GEYJ103 | 10k | |
| R393 | PQLQR1RS241T | COIL | S |
| | | | |
| L1 | ERJ3GEY0R00 | 0 | |
| | | | |
| | | (BATTERY TERMINALS) | |
| JT300 | PQJT10090Z | BATTERY TERMINAL | S |
| JT301 | PQJT10090Z | BATTERY TERMINAL | S |
| JT302 | PQJT10090Z | BATTERY TERMINAL | S |
| | | | |
| | | (SWITCH) | |
| SW300 | ESD165206 | SWITCH | |
| | | | |
| | | (THERMISTOR) | |
| TH300 | PQRTD0KHJ154 | THERMISTOR | S |
| | | | |
| | | (VARIABLE RESISTORS) | |
| VR300 | EVM1YSX50B14 | SEMI-FIXED RESISTOR | |
| VR301 | EVM1YSX50B54 | SEMI-FIXED RESISTOR | |
| | | | |
| | | (CRYSTAL OSCILLATORS) | |
| X300 | H0J103500007 | CRYSTAL OSCILLATOR | |
| X302 | PQVCE3276N9Z | CRYSTAL OSCILLATOR | |
| | | | |
| | | (OTHERS) | |
| E1 | WM-64PNT | MICROPHONE | |
| E2 | PSJQ1011Y | DC MOTOR | S |
| E3 | ESP1AJ21K | KEYBOARD SWITCH | |
| E4 | PSHG1209Z | RUBBER PARTS | |
| E5 | PSHS1026Z | NET | |
| E6 | PQJP02D2Z | CONNECTOR | |

## 14.2.3. RF UNIT

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB4 | PSWP4TD7894M | RF UNIT PARTS ASS'Y(RTL) | |
| | | | |
| | | (IC) | |
| IC501 | PQVILXT810TC | IC | |
| | | | |
| | | (CONNECTOR) | |
| CN501 | K1KB20A00032 | CONNECTOR | |
| | | | |
| C501 | ECUV1H090DCV | 9p | S |
| C502 | ECUV1H090DCV | 9p | S |
| C503 | PQCUV1C104ZF | 0.1 | S |
| C504 | PQCUV1C104ZF | 0.1 | S |
| C505 | ECUV1H220JCV | 22p | |
| C506 | ECST0JY226 | 22 | |
| C507 | PQCUV1C104ZF | 0.1 | S |
| C508 | ECUV1H220JCV | 22p | |
| C509 | ECUV1H220JCV | 22p | |
| C510 | ECUV1H101JCV | 100p | |
| C511 | ECUV1H220JCV | 22p | |
| C512 | ECUV1H223KBV | 0.022 | S |
| C513 | PQCUV1C104ZF | 0.1 | S |
| C514 | ECUV1H220JCV | 22p | |
| C515 | PQCUV1C104ZF | 0.1 | S |
| C516 | ECUV1H101JCV | 100p | |
| C517 | ECUV1H680JCV | 68p | |
| C518 | ECUV1H120JCV | 12p | |
| C519 | ECUV1H220JCV | 22p | |
| C520 | PQCUV1C104ZF | 0.1 | S |
| C521 | ECST0JY226 | 22 | |
| C522 | ECUV1H101JCV | 100p | |
| C524 | ECUV1H101JCV | 100p | |
| C525 | ECUV1H101JCV | 100p | |
| C526 | ECUV1H103KBV | 0.01 | |
| C527 | ECUV1H101JCV | 100p | |
| C528 | ECUV1H101JCV | 100p | |
| C530 | ECUV1H101JCV | 100p | |
| C531 | ECUV1H101JCV | 100p | |
| C532 | ECUV1H101JCV | 100p | |
| C533 | ECUV1H101JCV | 100p | |
| C534 | ECUV1H101JCV | 100p | |
| C535 | PQCUV1C104ZF | 0.1 | S |
| C536 | ECUV1H050CCV | 5p | |
| C537 | ECUV1H010CCV | 1p | |
| | | | |
| | | (RESISTORS) | |
| R501 | ERJ3GEYF153 | 15k | S |
| R502 | ERJ3GEYJ103 | 10k | |
| R503 | ERJ3GEYJ332 | 3.3k | |
| R504 | D0GB224ZA002 | 220k | |
| R522 | ERJ3GEYJ104 | 100k | S |
| | | | |
| | | (COILS) | |
| L502 | MQLRE5N6JF2 | COIL | |
| L504 | MQLRE47NJF2 | COIL | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| L505 | MQLRE47NJF2 | COIL | |
| L507 | MQLRE22NJF2 | COIL | |
| L508 | MQLRE10NJF2 | COIL | |
| | | | |
| | | (CERAMIC FILTER) | |
| FIL501 | J0D9156B0002 | CERAMIC FILTER | |
| | | | |
| | | (TRANSFORMER) | |
| T501 | J2GE00000008 | TRANSFORMER | |
| | | | |
| | | (CRYSTAL OSCILLATOR) | |
| X501 | H0J240500009 | CRYSTAL OSCILLATOR | |

# 14.3. CHARGER

## 14.3.1. CABINET AND ELECTRICAL PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 201 | PSKM1078Z1 | CABINET BODY | S |
| 202 | PSKF1051Z1 | CABINET,BOTTOM | S |
| 203 | PQHG316Z | RUBBER PARTS,LEGS | |
| 204 | PSQT1187Z | LABEL,CAUTION | |
| 205 | PSGT2070Z | NAME PLATE | |

## 14.3.2. MAIN BOARD

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB5 | PSWP5TD7894M | MAIN BOARD ASS'Y (RTL) | |
| | | | |
| | | (ICS) | |
| IC601 | PQVINJ2360D | IC | S |
| IC602 | PSVITA75S01F | IC | S |
| | | | |
| | | (TRANSISTORS) | |
| Q641 | 2SB1218A | TRANSISTOR(SI) | |
| | | | |
| | | (DIODES) | |
| D621 | MA738 | DIODE(SI) | |
| D622 | MA738 | DIODE(SI) | |
| D642 | MA1Z062 | DIODE(SI) | |
| D643 | MA111 | DIODE(SI) | |
| | | | |
| | | (JACK) | |
| CN601 | PSJJ1B002Z | JACK | S |
| | | | |
| | | (CAPACITORS) | |
| C601 | EEUFC1C221 | 220p | |
| C611 | ECUV1H221JCV | 220p | |
| C621 | EEUFC1C221 | 220p | |
| C622 | PQCUV1H102J | 0.001 | S |
| | | | |
| | | (RESISTORS) | |
| R601 | ERJ3GEYJ1R0 | 1 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R602 | ERJ3GEYJ1R0 | 1 | |
| R603 | ERJ3GEYJ1R0 | 1 | |
| R631 | ERJ6ENF1R00 | 1 | S |
| R632 | ERJ6ENF1R00 | 1 | S |
| R633 | ERJ6ENF1R00 | 1 | S |
| R634 | ERJ6ENF1R00 | 1 | S |
| R635 | ERJ3GEYF102 | 1k | S |
| R636 | ERJ3GEYF102 | 1k | S |
| R637 | D0GB912ZA002 | 9.1k | |
| R638 | ERJ3GEYJ272 | 2.7k | |
| R639 | ERJ3GEYJ472 | 4.7k | |
| R641 | ERJ3GEYJ104 | 100k | |
| R642 | ERJ3GEYJ103 | 10k | |
| R644 | ERJ3GEYJ333 | 33k | |
| R645 | ERJ3GEYJ103 | 10k | |
| R646 | PQ4R10XJ122 | 1.2k | S |
| R647 | ERJ3GEYJ102 | 1k | |
| | | | |
| | | (COIL) | |
| L601 | G1D330000001 | COIL | |
| | | | |
| | | (TERMINAL PLATES) | |
| JT601 | PSJT1038Z | TERMINAL PLATE | |
| JT602 | PSJT1038Z | TERMINAL PLATE | |
| JT603 | PSJT1038Z | TERMINAL PLATE | |

## 14.4. ACCESSORIES AND PACKING MATERIALS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| A1 | PQLV1 | AC ADAPTOR | ⚠ |
| A2 | XWG35FY | WASHER | |
| A3 | PQHE5004Z | SCREW | |
| A4 | PQJA48W | CORD,TEL | |
| A5 | PSKE1040Z | BELT HOLDER | |
| A6 | PSKE1036Z | HANGER | |
| A7 | PQKL25Y | STAND | |
| A8 | PSQX2106Z | INSTRUCTION BOOK | |
| A9 | PSQW1531Z | LEAFLET | |
| A10 | PSQA2325Z | LEAFLET(FOR HANDSET) | |
| | | | |
| P1 | PSPK1831Z | GIFT BOX | |
| P2 | PSPN1124Z | ACCESSORY BOX | |
| P3 | PSPD1147Z | CUSHION | |
| P4 | PQPH89Y | PROTECTION COVER (FOR BASE UNIT) | |
| P5 | XZB10X25A04 | PROTECTION COVER(FOR HANDSET) | |
| P6 | XZB15X25A04 | PROTECTION COVER(FOR CHARGER) | |
| P7 | XZB10X25A02 | PROTECTION COVER (FOR ACCESSORIES) | |
| P8 | XZB05X08A03 | PROTECTION COVER (FOR SCREWS AND WASHER) | |

# 15. BLOCK DIAGRAM

## 15.1. BASE UNIT

## 15.2. HANDSET

# 16. SCHEMATIC DIAGRAM

## 16.1. BASE UNIT (MAIN)

## 16.2. BASE UNIT (RF)

## 16.3. HANDSET (MAIN)

## 16.4. HANDSET (RF)

## 16.5. CHARGER

# 17. PRINTED CIRCUIT BOARD

## 17.1. BASE UNIT(MAIN)

### 17.1.1. COMPONENT VIEW

### 17.1.2. BOTTOM VIEW

## 17.2. BASE UNIT(RF)

## 17.3. HANDSET(MAIN)

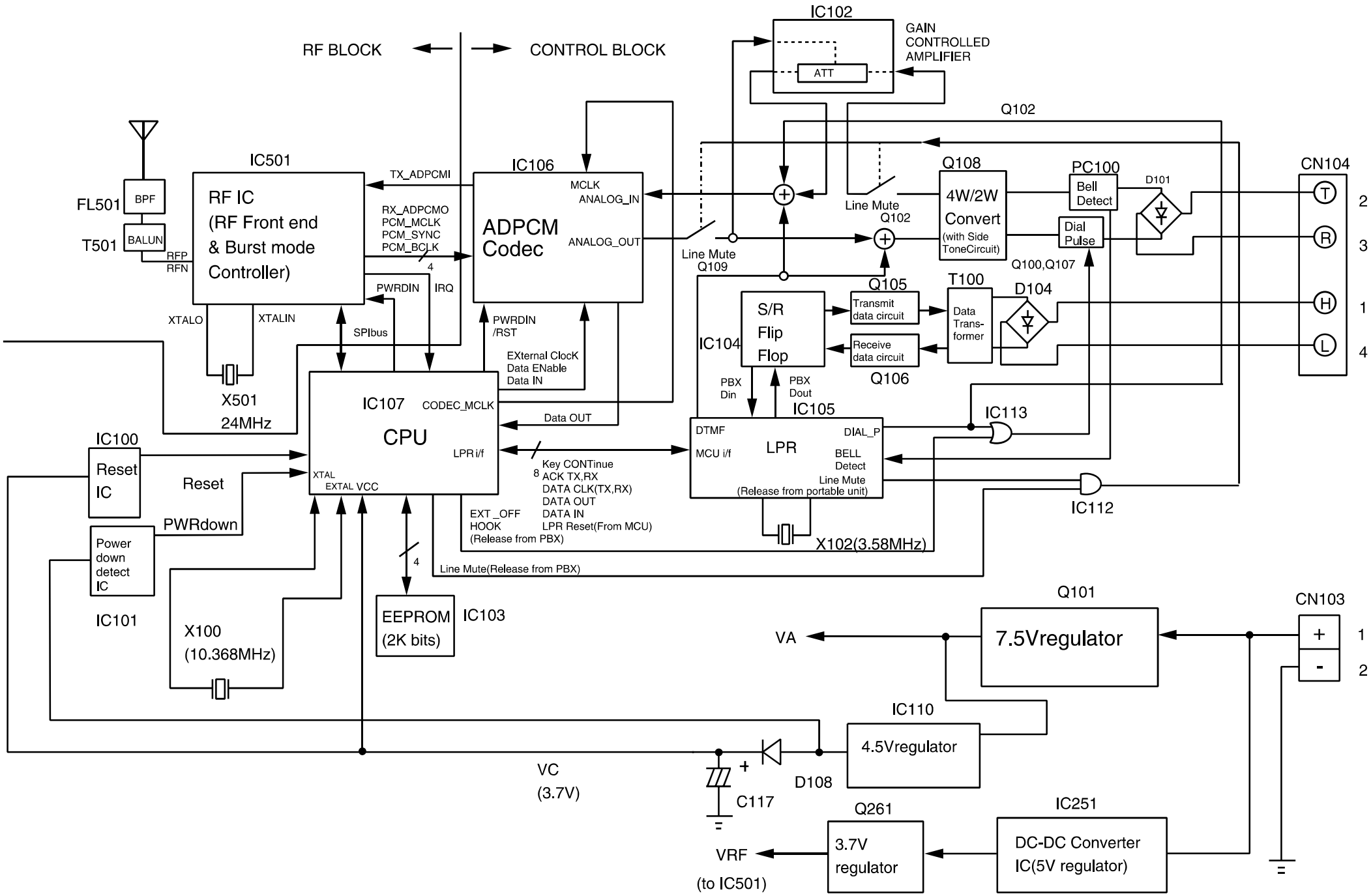
### 17.3.1. CONPONENT VIEW

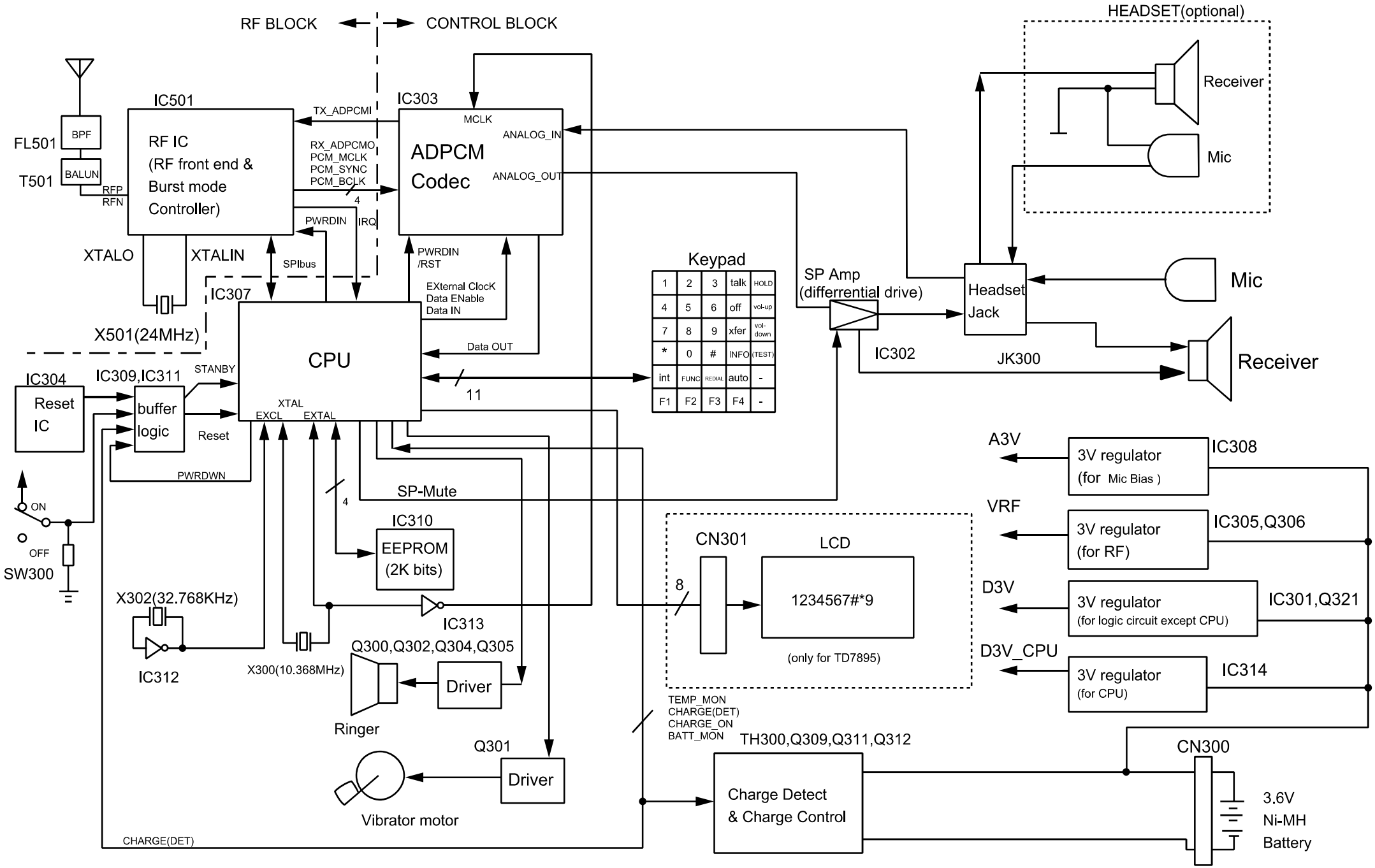
### 17.3.2. BOTTOM VIEW

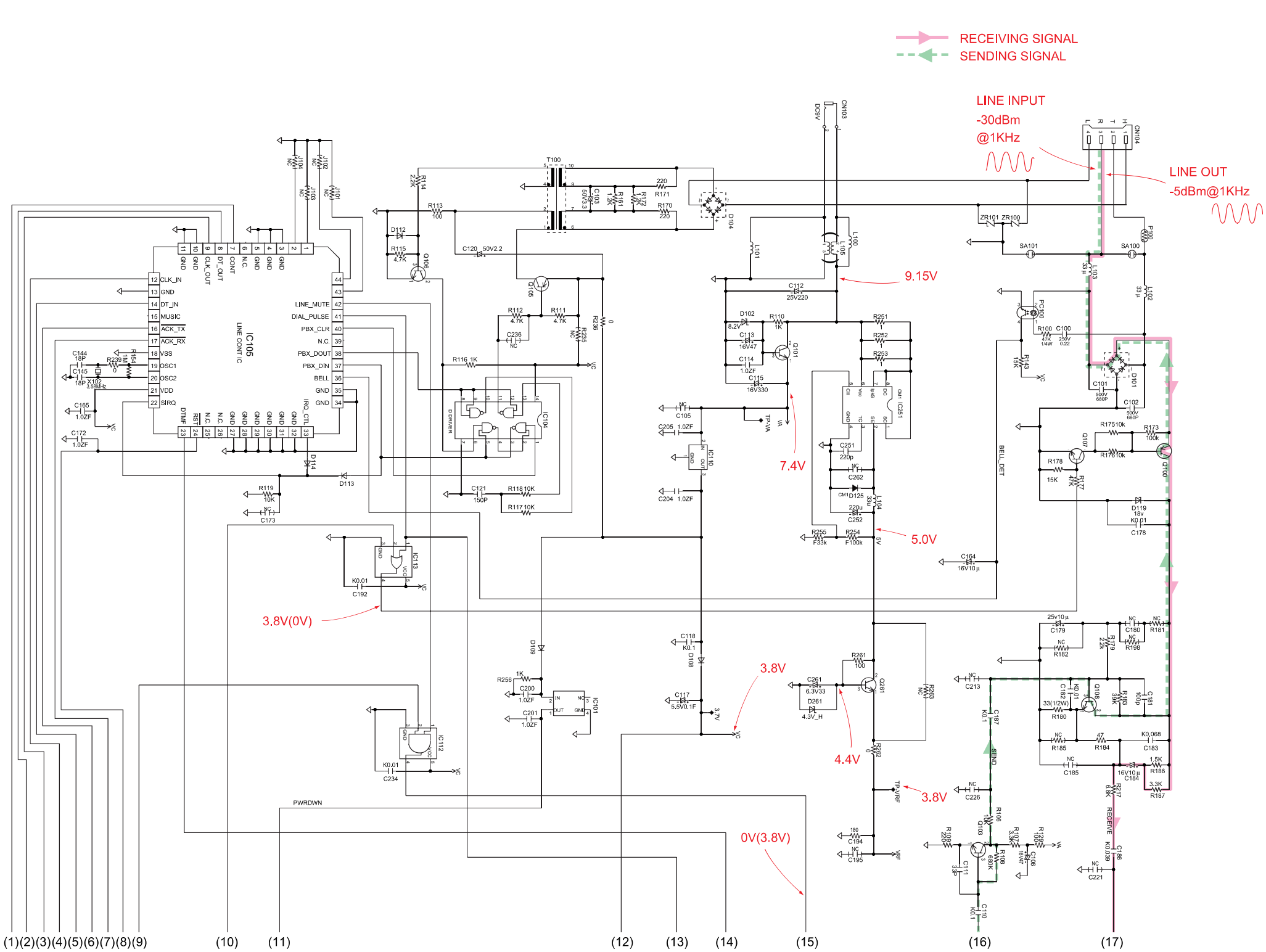
## 17.4. HANDSET(RF)

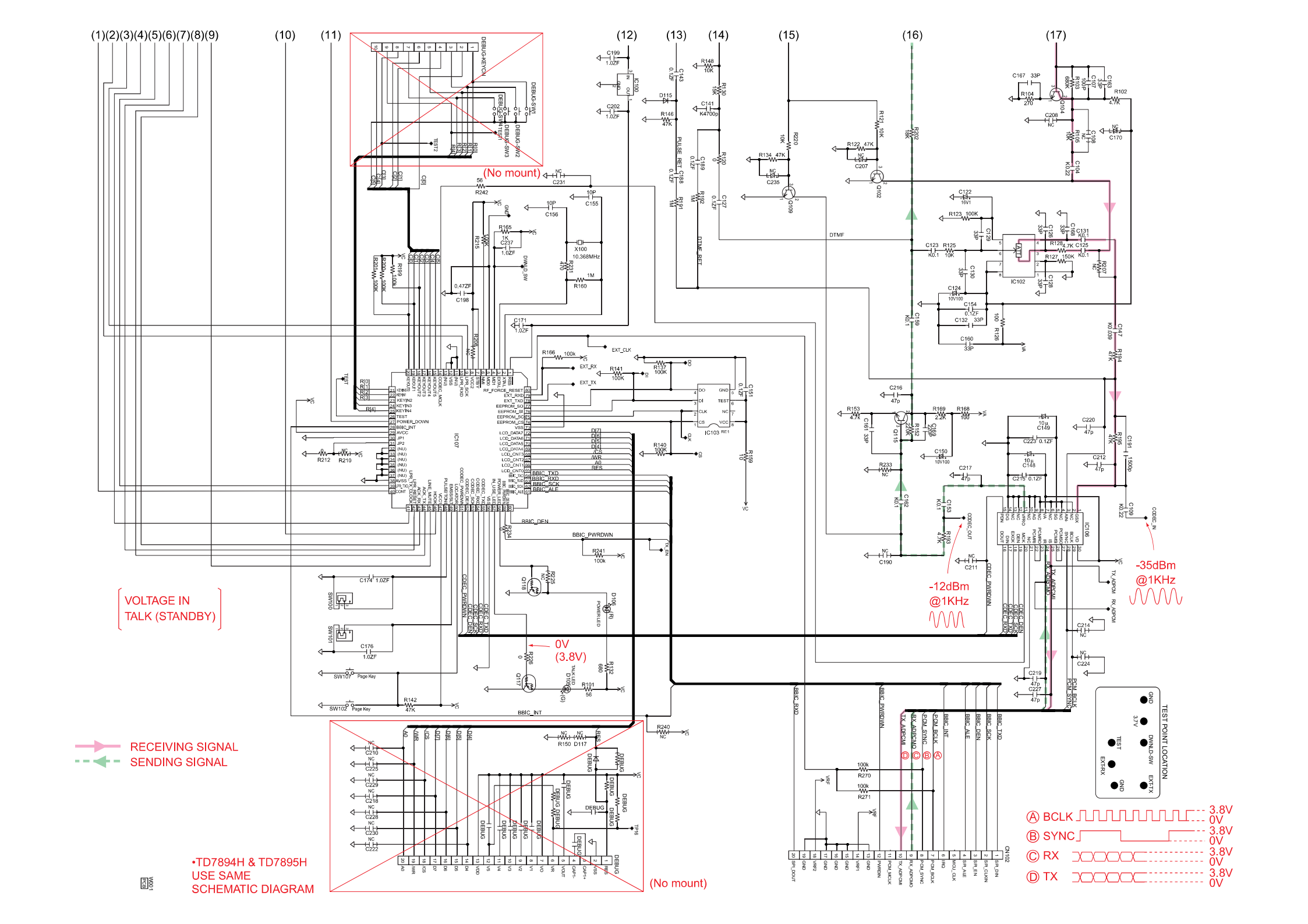
## 17.5. CHARGER BOARD

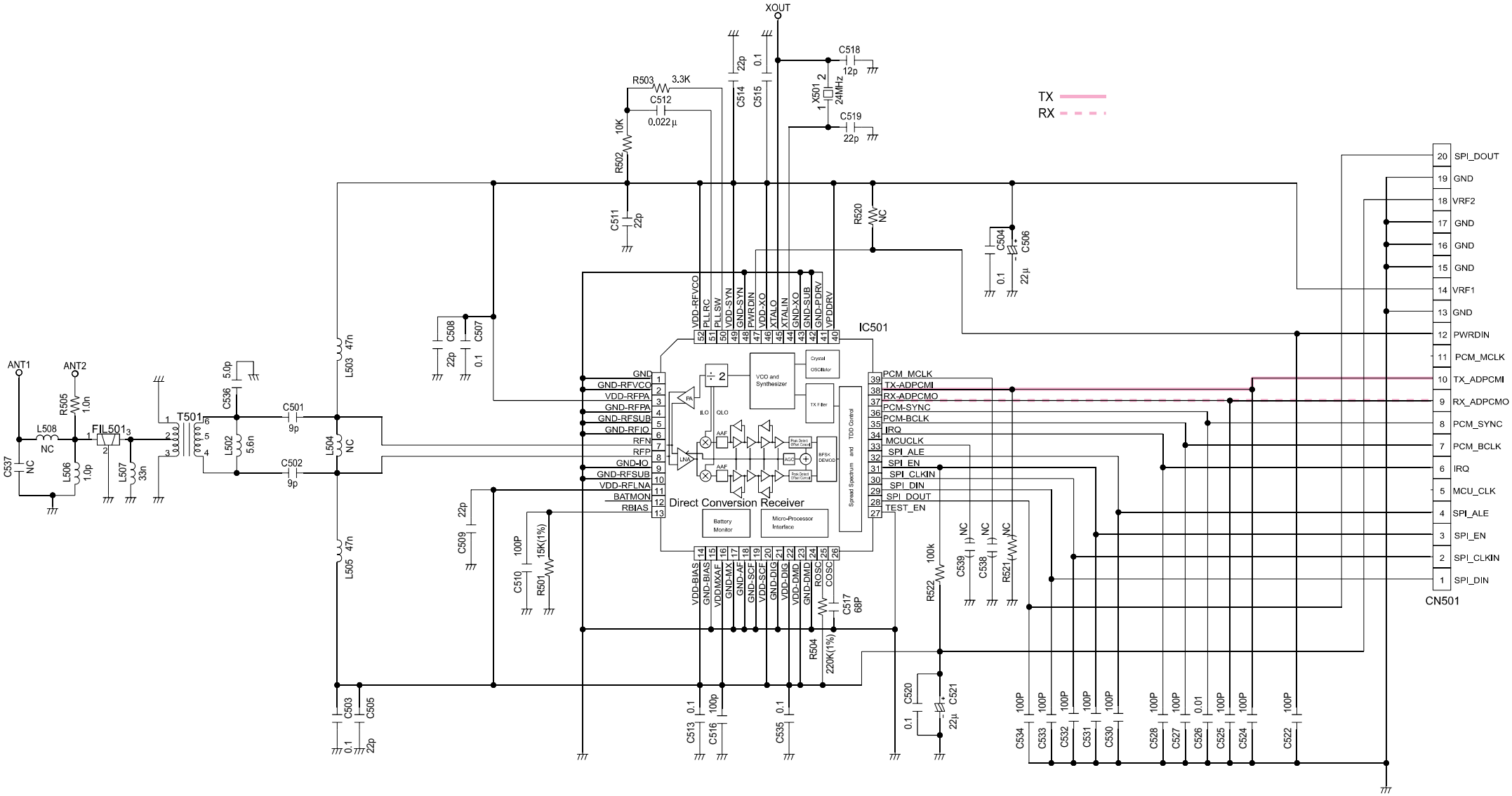
**A KXTD7895**


RF BLOCK
CONTROL BLOCK
IC102
GAIN CONTROLLED AMPLIFIER
ATT
Q102
IC501
RF IC
(RF Front end & Burst mode Controller)
FL501
BPF
T501
BALUN
RFP
RFN
TX_ADPCMI
RX_ADPCMO
PCM_MCLK
PCM_SYNC
PCM_BCLK
4
PWRDIN
IRQ
SPIbus
XTALO
XTALIN
X501
24MHz
IC106
ADPCM Codec
MCLK
ANALOG_IN
ANALOG_OUT
PWRDIN
/RST
EXternal ClocK
Data ENable
Data IN
Line Mute
Q109
Line Mute
Q102
Q108
4W/2W Convert
(with Side ToneCircuit)
PC100
Bell Detect
Dial Pulse
D101
Q100,Q107
CN104
T
R
H
L
2
3
1
4
Q105
Transmit data circuit
Receive data circuit
T100
Data Trans-former
D104
Q106
IC104
S/R Flip Flop
PBX Din
PBX Dout
IC105
IC107
CPU
CODEC_MCLK
Data OUT
LPR i/f
XTAL
EXTAL VCC
IC100
Reset IC
Reset
PWRdown
Power down detect IC
IC101
X100
(10.368MHz)
8
Key CONTinue
ACK TX,RX
DATA CLK(TX,RX)
DATA OUT
DATA IN
LPR Reset(From MCU)
EXT _OFF HOOK
(Release from PBX)
DTMF
MCU i/f
LPR
DIAL_P
BELL Detect
Line Mute
(Release from portable unit)
X102(3.58MHz)
IC113
IC112
Line Mute(Release from PBX)
4
EEPROM
(2K bits)
IC103
Q101
7.5Vregulator
VA
CN103
+
-
1
2
IC110
4.5Vregulator
VC
(3.7V)
D108
C117
Q261
3.7V regulator
VRF
(to IC501)
IC251
DC-DC Converter IC(5V regulator)

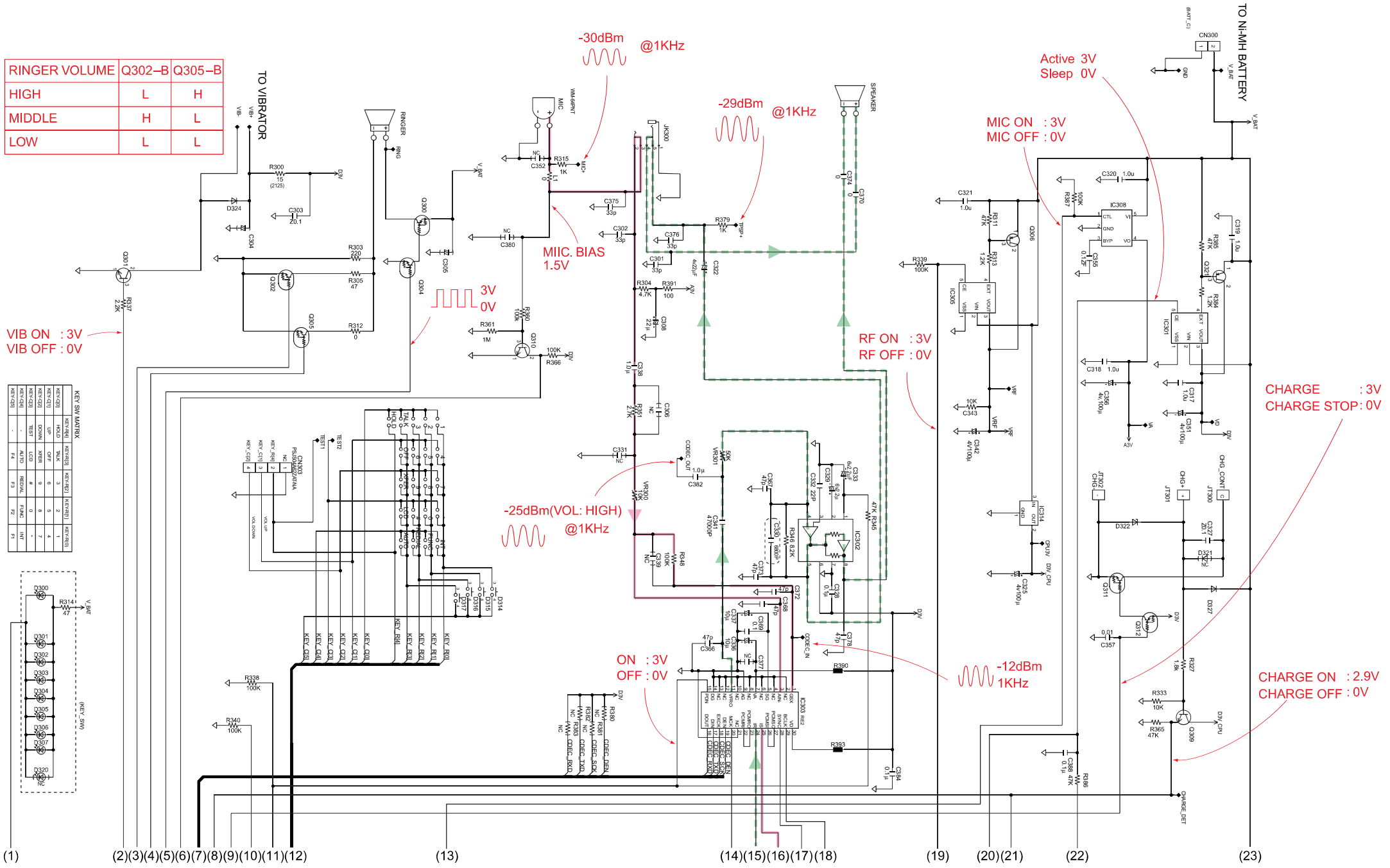

RF BLOCK
CONTROL BLOCK
HEADSET(optional)
Receiver
Mic
IC501
RF IC
(RF front end &
Burst mode
Controller)
FL501
BPF
T501
BALUN
RFP
RFN
TX_ADPCMI
RX_ADPCMO
PCM_MCLK
PCM_SYNC
PCM_BCLK
4
PWRDIN
IRQ
XTALO
XTALIN
SPIbus
IC303
ADPCM
Codec
MCLK
ANALOG_IN
ANALOG_OUT
PWRDIN
/RST
EXternal ClocK
Data ENable
Data IN
Data OUT
IC307
CPU
X501(24MHz)
11
Keypad
1 2 3 talk HOLD
4 5 6 off vol-up
7 8 9 xfer vol-down
* 0 # INFO (TEST)
int FUNC REDIAL auto -
F1 F2 F3 F4 -
SP Amp
(differrential drive)
IC302
Headset
Jack
JK300
Mic
Receiver
IC304
Reset
IC
IC309,IC311
buffer
logic
STANBY
Reset
XTAL
EXCL
EXTAL
PWRDWN
SP-Mute
4
ON
OFF
SW300
IC310
EEPROM
(2K bits)
X302(32.768KHz)
IC312
IC313
X300(10.368MHz)
Q300,Q302,Q304,Q305
Driver
Ringer
Q301
Driver
Vibrator motor
CHARGE(DET)
CN301
LCD
8
1234567#*9
(only for TD7895)
TEMP_MON
CHARGE(DET)
CHARGE_ON
BATT_MON
TH300,Q309,Q311,Q312
Charge Detect
& Charge Control
A3V
3V regulator
(for Mic Bias )
IC308
VRF
3V regulator
(for RF)
IC305,Q306
D3V
3V regulator
(for logic circuit except CPU)
IC301,Q321
D3V_CPU
3V regulator
(for CPU)
IC314
CN300
3.6V
Ni-MH
Battery

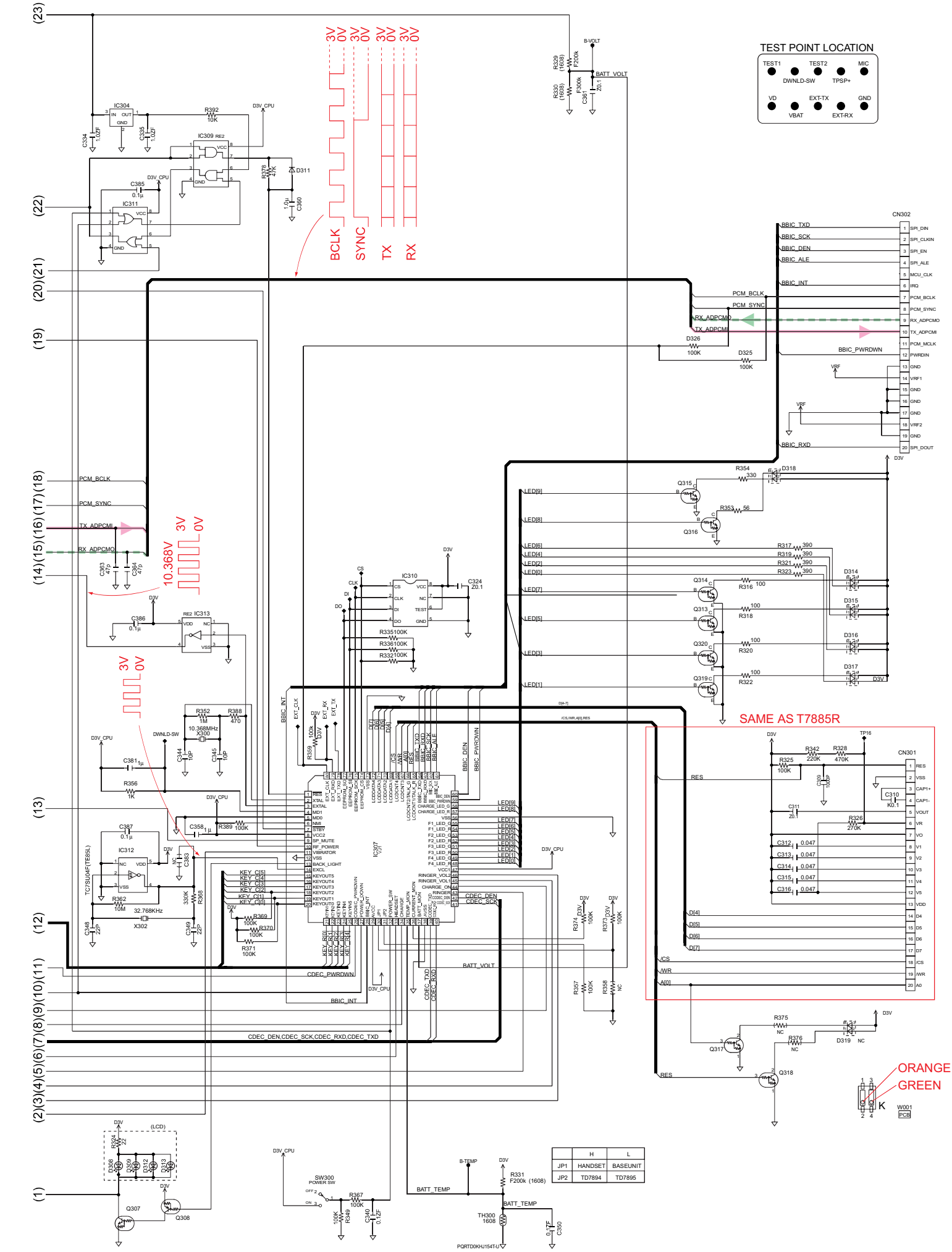

RECEIVING SIGNAL
SENDING SIGNAL
LINE INPUT
-30dBm
@1KHz
LINE OUT
-5dBm@1KHz
9.15V
7.4V
5.0V
3.8V(0V)
3.8V
4.4V
3.8V
0V(3.8V)
PWRDWN
IC105
LINE CONT IC
CLK_IN
GND
DT_IN
MUSIC
ACK_TX
ACK_RX
VSS
OSC1
OSC2
VDD
SIRQ
CLK_OUT
DT_OUT
CONT
N.C.
LINE_MUTE
DIAL_PULSE
PBX_CLR
PBX_DOUT
PBX_DIN
BELL
IRQ_CTL
DTMF
RST
BELL_DET
SEND
RECEIVE
(1)(2)(3)(4)(5)(6)(7)(8)(9)
(10)
(11)
(12)
(13)
(14)
(15)
(16)
(17)

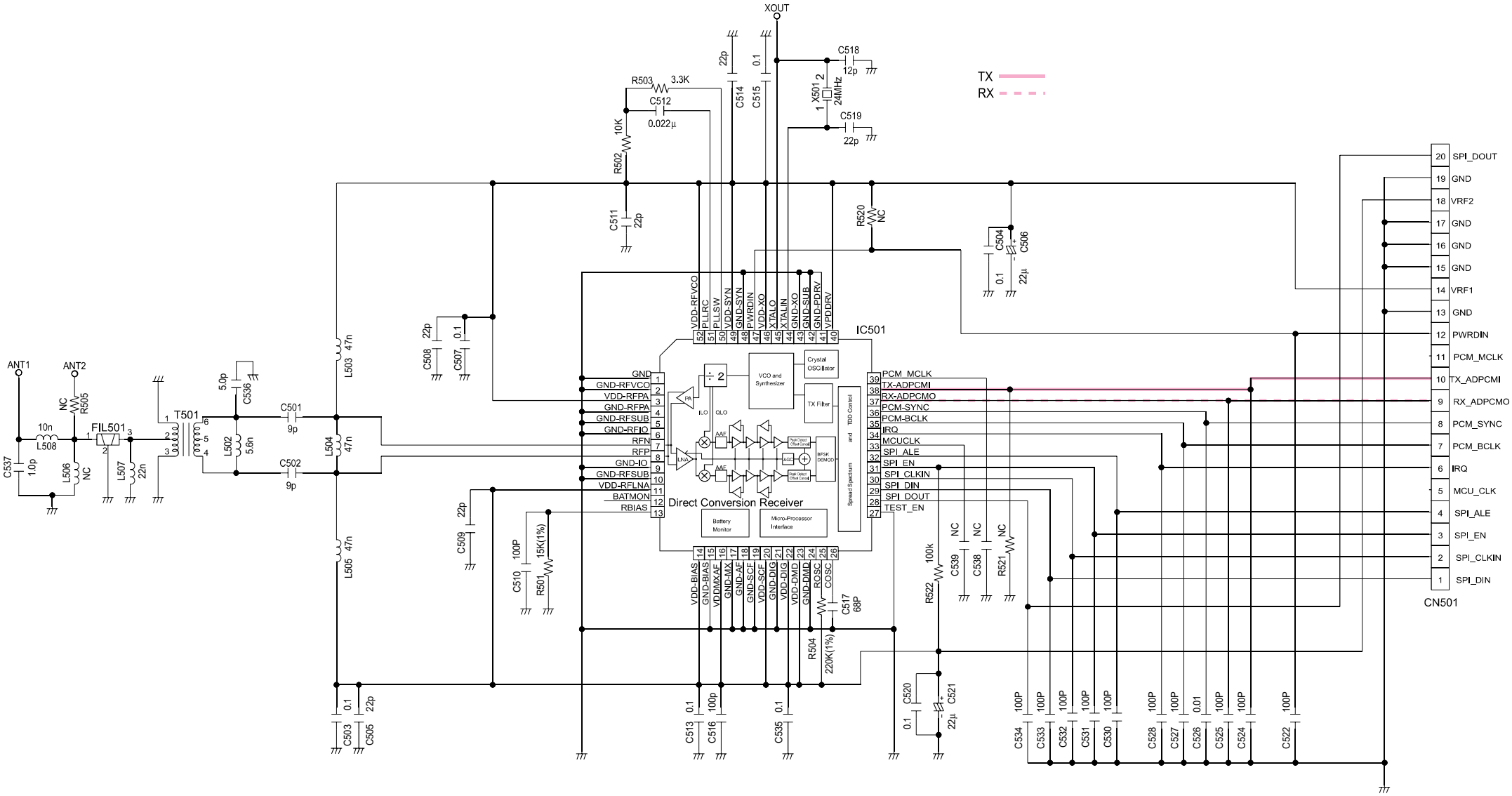

(1)(2)(3)(4)(5)(6)(7)(8)(9)
(10)
(11)
(12)
(13)
(14)
(15)
(16)
(17)
(No mount)
DEBUG-KEYCN
DEBUG-SW1
DEBUG-SW2
DEBUG-SW3
DEBUG-SW4
TEST1
TEST2
IC107
IC102
IC103
IC106
X100
10.368MHz
DTMF
PULSE RET
DTMF RET
EXT_CLK
EXT_RX
EXT_TX
BBIC_TXD
BBIC_RXD
BBIC_SCK
BBIC_ALE
BBIC_DEN
BBIC_PWRDWN
BBIC_INT
CODEC_OUT
CODEC_IN
CODEC_PWRDWN
TX_ADPCM
RX_ADPCM
PCM_SYNC
PCM_BCLK
PCM_MCLK
-12dBm
@1KHz
-35dBm
@1KHz
0V
(3.8V)
VOLTAGE IN
TALK (STANDBY)
RECEIVING SIGNAL
SENDING SIGNAL
TEST POINT LOCATION
GND
3.7V
DWN.D-SW
TEST
EXTRX
EXTTX
Ⓐ BCLK
Ⓑ SYNC
Ⓒ RX
Ⓓ TX
3.8V
0V
•TD7894H & TD7895H
USE SAME
SCHEMATIC DIAGRAM
W001
PCB

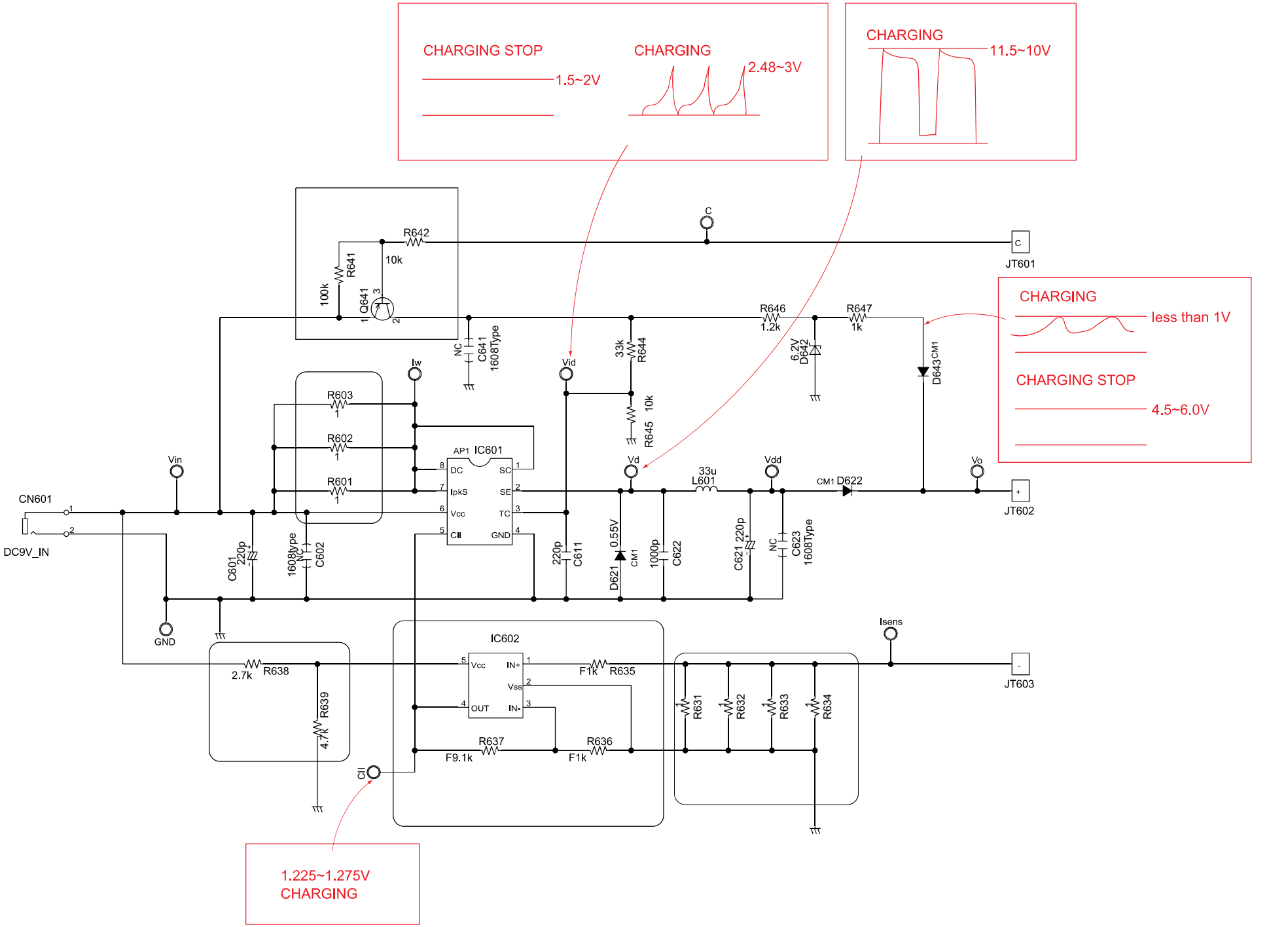

XOUT
TX
RX
IC501
Direct Conversion Receiver
VCO and Synthesizer
Crystal Oscillator
TX Filter
TDD Control
Spread Spectrum and
Battery Monitor
Micro-Processor Interface
BFSK DEMOD
PA
LNA
AAF
AGC
ILO
QLO
GND
GND-RFVCO
VDD-RFPA
GND-RFPA
GND-RFSUB
GND-RFIO
RFN
RFP
GND-IO
GND-RFSUB
VDD-RFLNA
BATMON
RBIAS
VDD-RFVCO
PLLRC
PLLSW
VDD-SYN
GND-SYN
PWRDIN
VDD-XO
XTALO
XTALIN
GND-XO
GND-SUB
GND-PDRV
VPDDRV
PCM_MCLK
TX-ADPCMI
RX-ADPCMO
PCM-SYNC
PCM-BCLK
IRQ
MCUCLK
SPI_ALE
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
TEST_EN
VDD-BIAS
GND-BIAS
VDDMXAF
GND-MX
GND-AF
GND-SCF
VDD-SCF
GND-DIG
VDD-DIG
VDD-DMD
GND-DMD
ROSC
COSC
ANT1
ANT2
FIL501
T501
X501
24MHz
R503 3.3K
C512 0.022µ
R502 10K
C518 12p
C519 22p
C514 22p
C515 0.1
C511 22p
R520 NC
C504 0.1
C506 22µ
C508 22p
C507 0.1
R505 1.0n
L508 NC
L506 1.0p
L507 33n
C537 NC
C536 5.0p
L502 5.6n
C501 9p
C502 9p
L503 47n
L504 NC
L505 47n
C503 0.1
C505 22p
C509 22p
C510 100P
R501 15K(1%)
R504 220K(1%)
C517 68P
R522 100k
C539 NC
C538 NC
R521 NC
C520 0.1
C521 22µ
C513 0.1
C516 100p
C535 0.1
C534 100P
C533 100P
C532 100P
C531 100P
C530 100P
C528 100P
C527 100P
C526 0.01
C525 100P
C524 100P
C522 100P
CN501
20 SPI_DOUT
19 GND
18 VRF2
17 GND
16 GND
15 GND
14 VRF1
13 GND
12 PWRDIN
11 PCM_MCLK
10 TX_ADPCMI
9 RX_ADPCMO
8 PCM_SYNC
7 PCM_BCLK
6 IRQ
5 MCU_CLK
4 SPI_ALE
3 SPI_EN
2 SPI_CLKIN
1 SPI_DIN

| RINGER VOLUME | Q302–B | Q305–B |
|---|---|---|
| HIGH | L | H |
| MIDDLE | H | L |
| LOW | L | L |

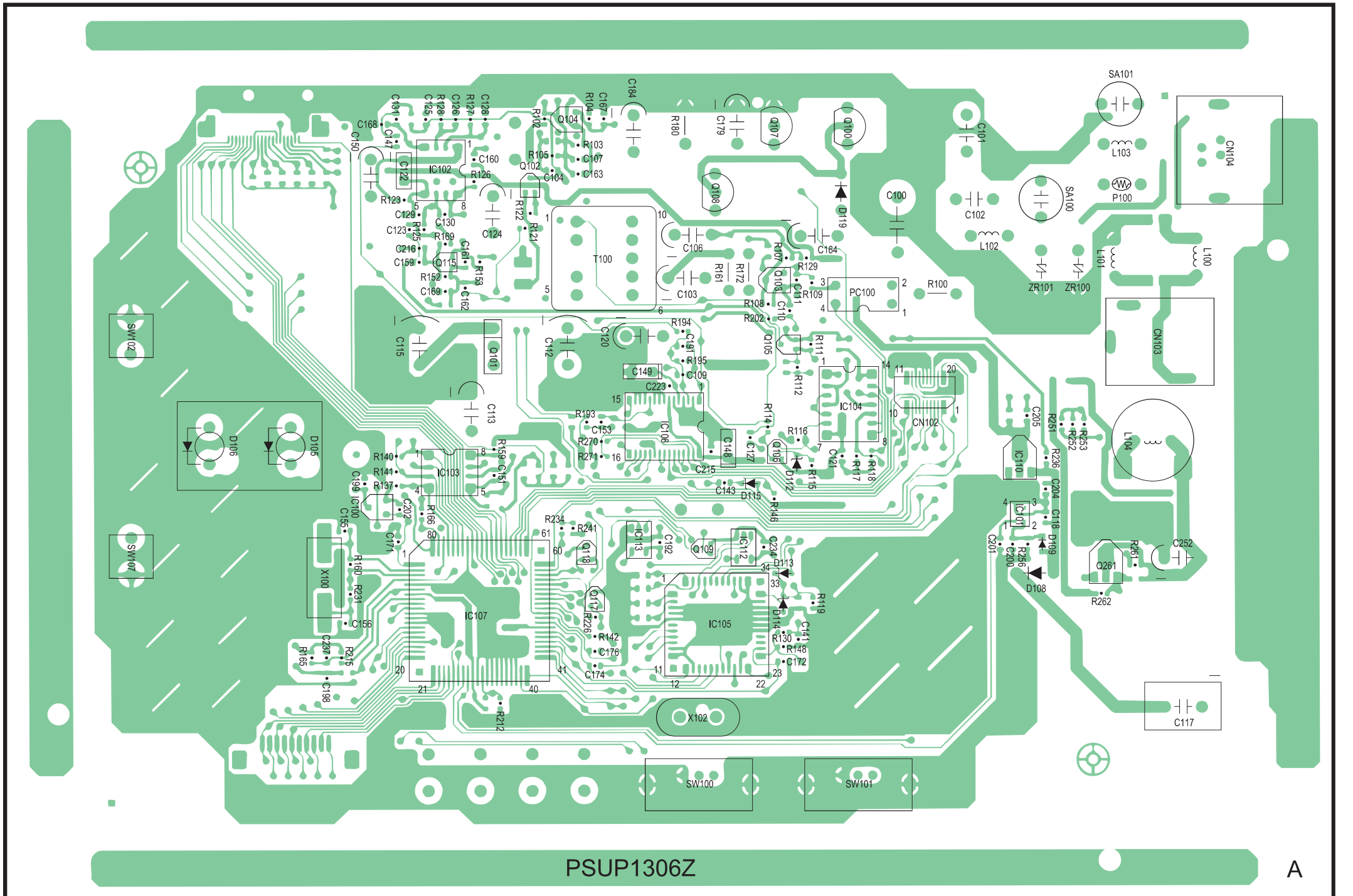


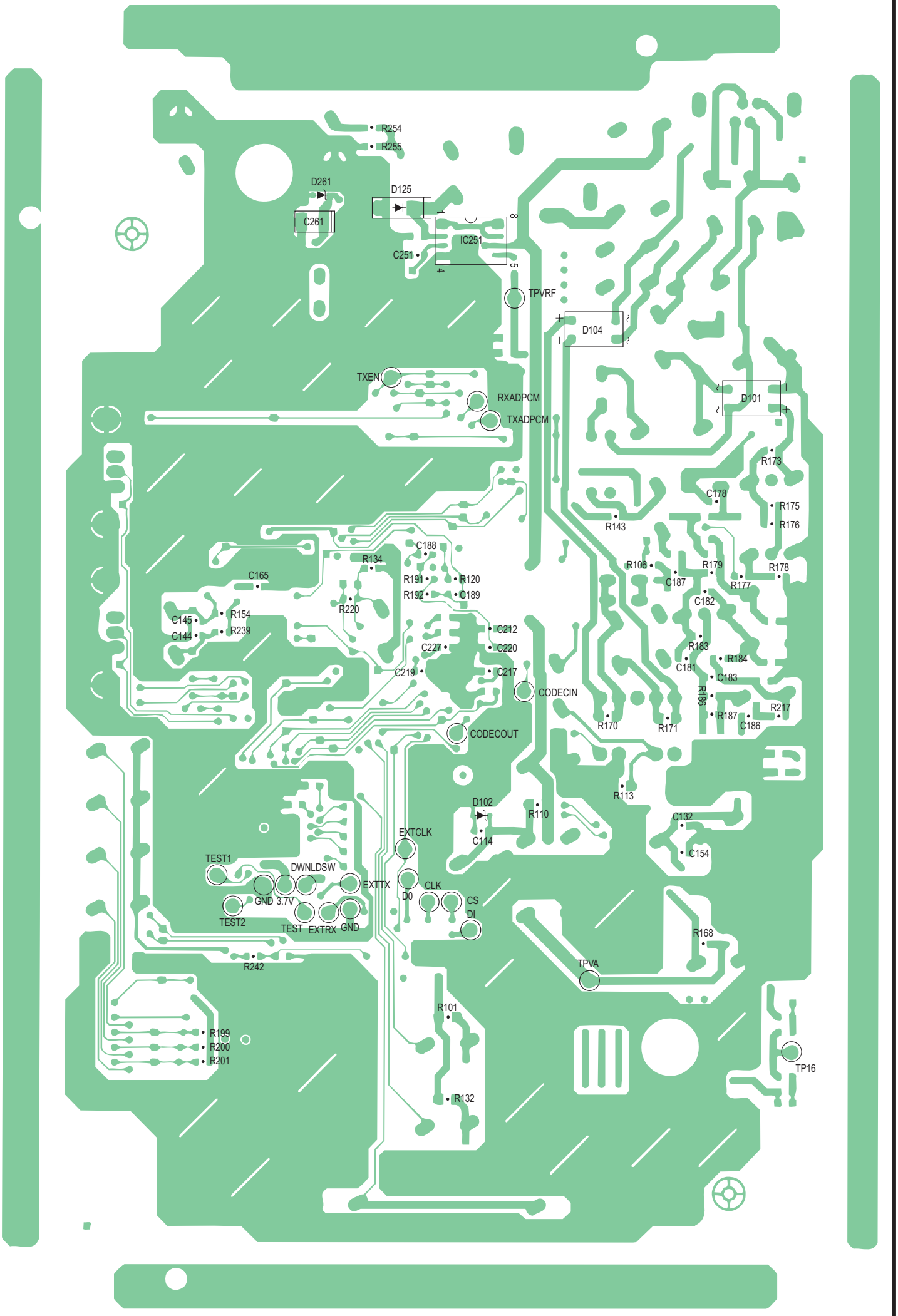

TEST POINT LOCATION
TEST1
TEST2
MIC
DWNLD-SW
TPSP+
VD
EXT-TX
GND
VBAT
EXT-RX
BCLK
SYNC
TX
RX
3V
0V
B-VOLT
BATT_VOLT
IC304
IC309 RE2
IC311
IC310
IC313
IC312
IC307
CN302
CN301
BBIC_TXD
BBIC_SCK
BBIC_DEN
BBIC_ALE
BBIC_PWRDWN
PCM_BCLK
PCM_SYNC
RX_ADPCMO
TX_ADPCMI
VRF
BBIC_RXD
SPI_DIN
SPI_CLKIN
SPI_EN
SPI_ALE
MCU_CLK
IRQ
PWRDIN
SPI_DOUT
SAME AS T7885R
RES
/CS
/WR
A[0]
D[4]
D[5]
D[6]
D[7]
CDEC_DEN
CDEC_SCK
CDEC_PWRDWN
CDEC_TXD
CDEC_RXD
CDEC_DEN,CDEC_SCK,CDEC_RXD,CDEC_TXD
BBIC_INT
BATT_VOLT
BATT_TEMP
ORANGE
GREEN
W001
PCB
(LCD)
SW300
POWER SW
Q307
Q308
Q315
Q316
Q313
Q314
Q320
Q319
Q317
Q318
D314
D315
D316
D317
D318
D319
LED[9]
LED[8]
LED[7]
LED[6]
LED[5]
LED[4]
LED[3]
LED[2]
LED[1]
LED[0]
KEY_C[5]
KEY_C[4]
KEY_C[3]
KEY_C[2]
KEY_C[1]
KEY_C[0]
KEY_R[0]
KEY_R[1]
KEY_R[2]
KEY_R[3]
KEY_R[4]
X300
X302
32.768KHz
10.368MHz
TC7SU04FT(TE85L)
PQRTD0KHJ154T-U
TH300
1608
B-TEMP
JP1
JP2
HANDSET
BASEUNIT
TD7894
TD7895
(23)
(22)
(21)
(20)
(19)
(18)
(17)
(16)
(15)
(14)
(13)
(12)
(11)
(10)
(9)
(8)
(7)
(6)
(5)
(4)
(3)
(2)
(1)


XOUT
TX
RX
IC501
Direct Conversion Receiver
Crystal Oscillator
VCO and Synthesizer
TX Filter
Battery Monitor
Micro-Processor Interface
Spread Spectrum
TDD Control and
BFSK DEMOD
AGC
PA
LNA
AAF
ILO
QLO
GND
GND-RFVCO
VDD-RFPA
GND-RFPA
GND-RFSUB
GND-RFIO
RFN
RFP
GND-IO
GND-RFSUB
VDD-RFLNA
BATMON
RBIAS
VDD-RFVCO
PLLRC
PLLSW
VDD-SYN
GND-SYN
PWRDIN
VDD-XO
XTALO
XTALIN
GND-XO
GND-SUB
GND-PDRV
VPDDRV
VDD-BIAS
GND-BIAS
VDDMXAF
GND-MX
GND-AF
GND-SCF
VDD-SCF
GND-DIG
VDD-DIG
VDD-DMD
GND-DMD
ROSC
COSC
PCM_MCLK
TX-ADPCMI
RX-ADPCMO
PCM-SYNC
PCM-BCLK
IRQ
MCUCLK
SPI_ALE
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
TEST_EN
ANT1
ANT2
FIL501
T501
X501
24MHz
CN501
SPI_DOUT
GND
VRF2
GND
GND
GND
VRF1
GND
PWRDIN
PCM_MCLK
TX_ADPCMI
RX_ADPCMO
PCM_SYNC
PCM_BCLK
IRQ
MCU_CLK
SPI_ALE
SPI_EN
SPI_CLKIN
SPI_DIN

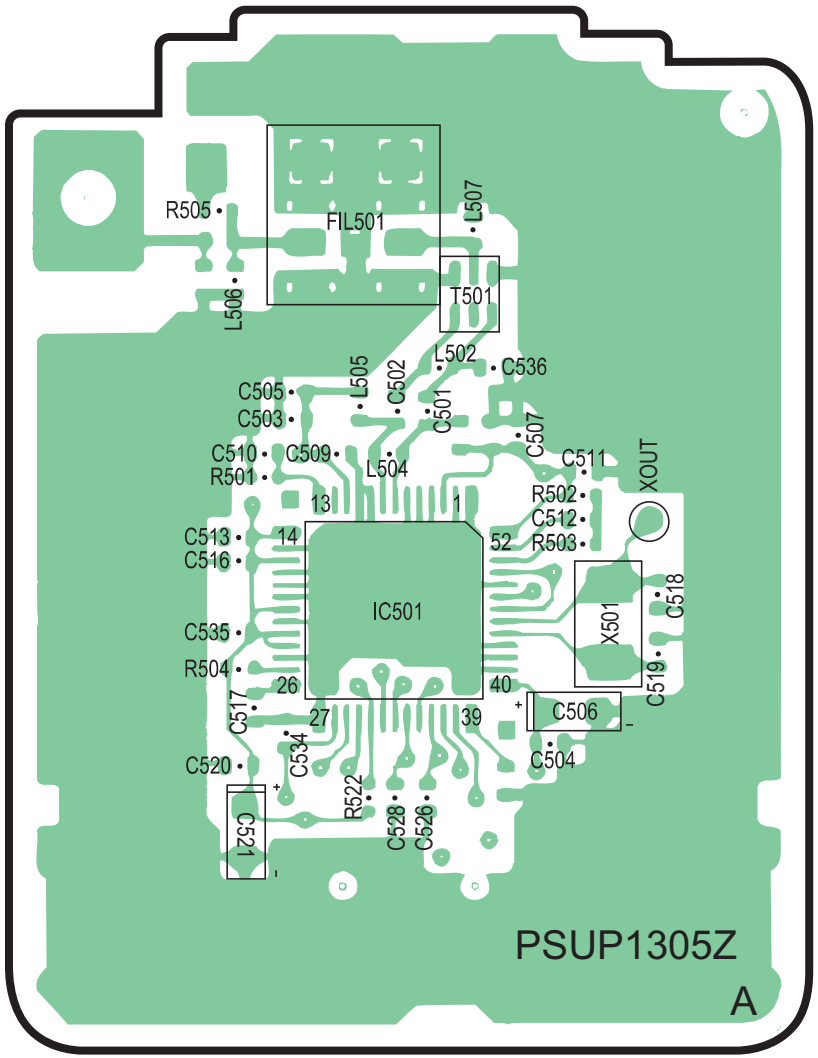

CHARGING STOP
1.5~2V
CHARGING
2.48~3V
CHARGING
11.5~10V
CHARGING
less than 1V
CHARGING STOP
4.5~6.0V
1.225~1.275V
CHARGING
C
JT601
R642
10k
R641
100k
Q641
R646
1.2k
R647
1k
6.2V
D642
D643 CM1
NC
C641
1608Type
33k
R644
10k
R645
Iw
Vid
Vd
Vdd
Vo
R603
R602
R601
AP1 IC601
DC
IpkS
Vcc
CII
SC
SE
TC
GND
33u
L601
CM1 D622
JT602
Vin
CN601
DC9V_IN
C601
220p
1608type
NC
C602
220p
C611
0.55V
D621 CM1
1000p
C622
C621 220p
NC
C623
1608Type
GND
IC602
Vcc
OUT
IN+
Vss
IN-
F1k
R635
2.7k
R638
4.7k
R639
R637
F9.1k
R636
F1k
Isens
R631
R632
R633
R634
JT603
CII

W001
PCB

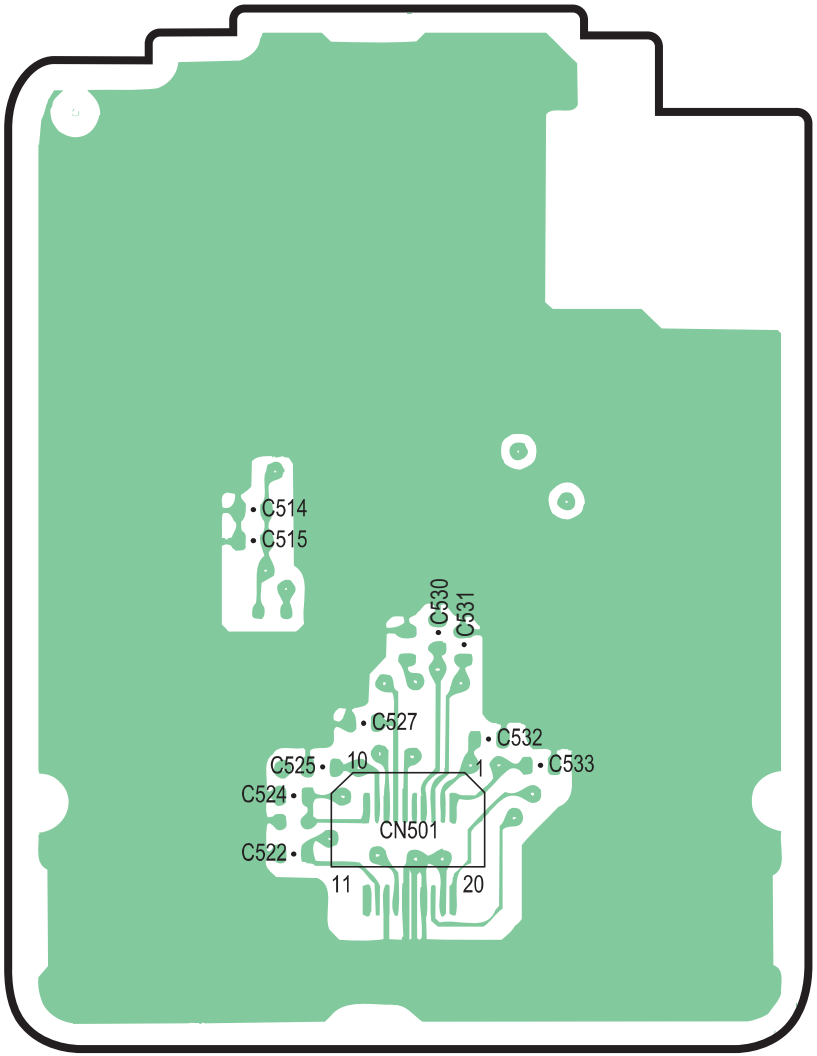

PSUP1306Z
A

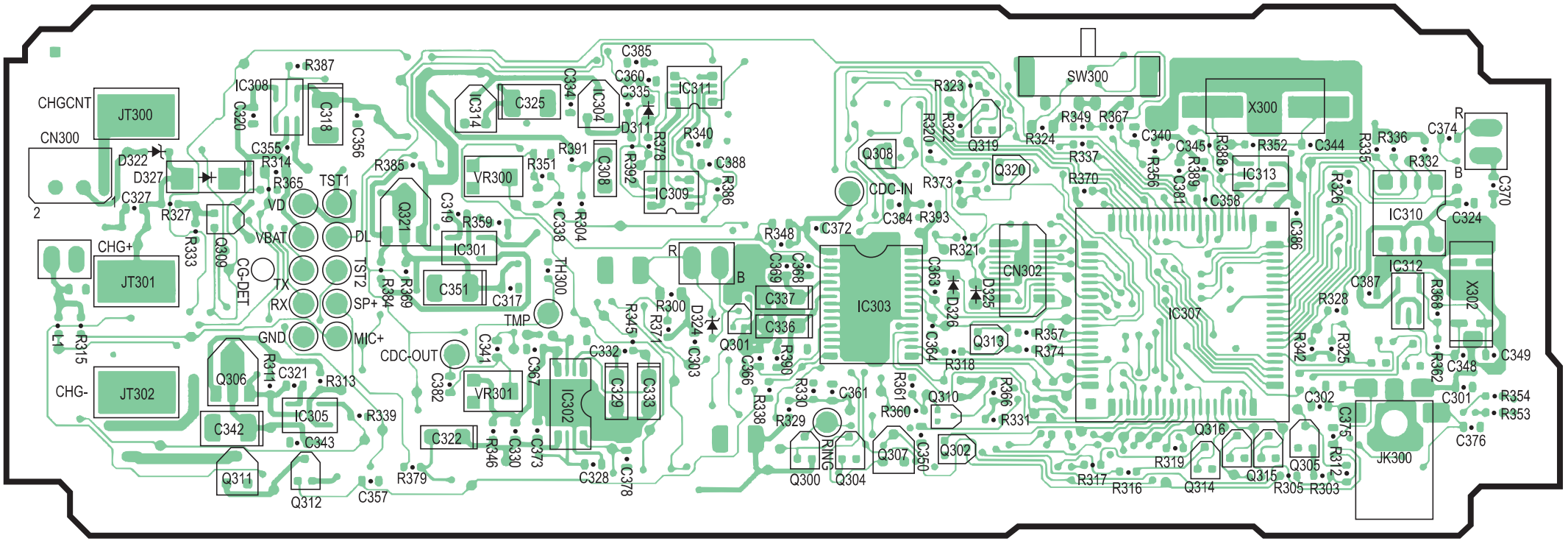

R254
R255
D261
D125
C261
IC251
C251
TPVRF
D104
TXEN
RXADPCM
TXADPCM
D101
R173
C178
R175
R176
R143
C188
R134
R106
R179
R178
C165
R191
R120
C187
R177
R192
C189
C182
R220
C145
R154
C212
C144
R239
C227
C220
R183
C219
C217
R184
C181
C183
CODECIN
R186
R217
R187
C186
R170
R171
CODECOUT
R113
D102
R110
C132
EXTCLK
C114
C154
TEST1
DWNLDSW
EXTTX
CLK
CS
GND 3.7V
D0
DI
TEST2
TEST
EXTRX
GND
R168
R242
TPVA
R101
R199
R200
R201
TP16
R132

COMPONENT VIEW




BOTTOM VIEW




CHGCNT
JT300
CN300
D322
D327
C327
2
R327
R333
Q309
CG-DET
CHG+
JT301
L1
R315
CHG-
JT302
Q306
R311
C321
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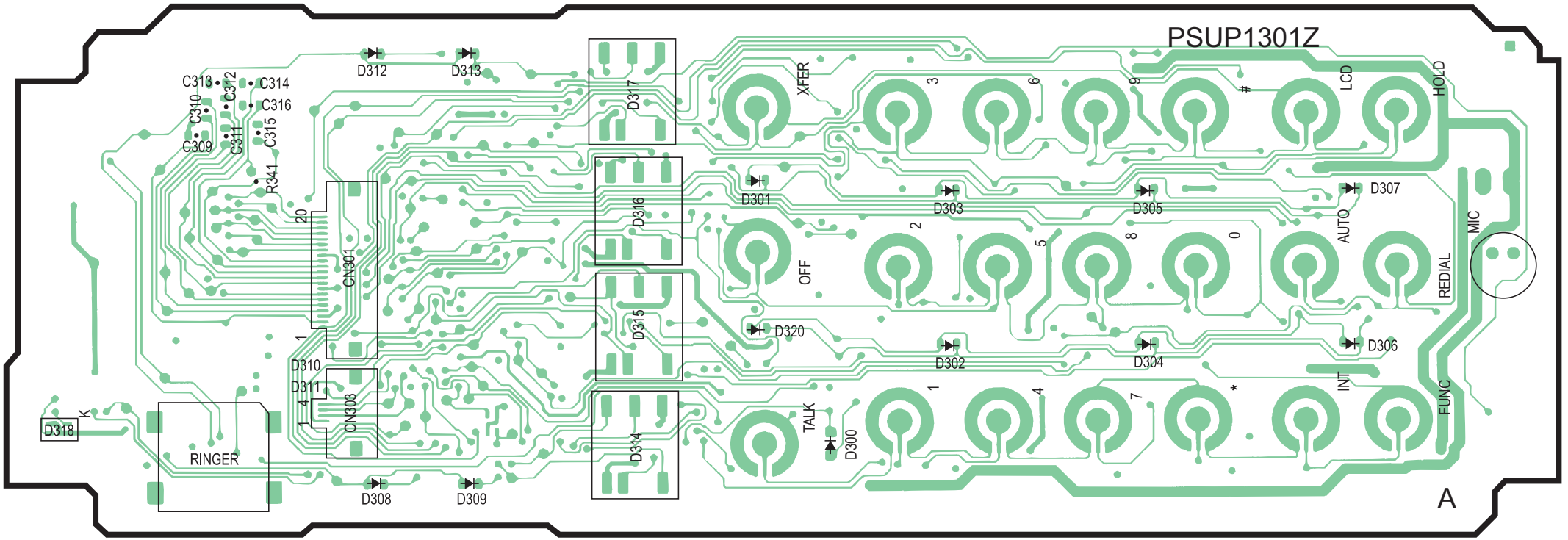
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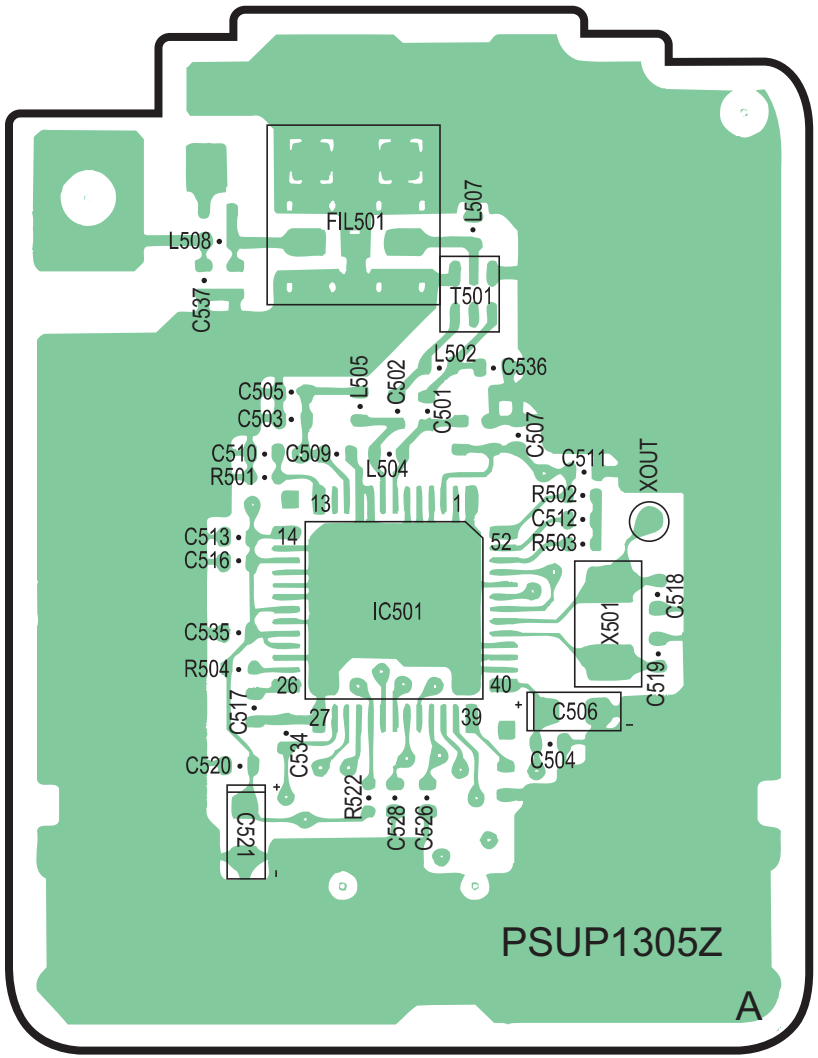
COMPONENT VIEW

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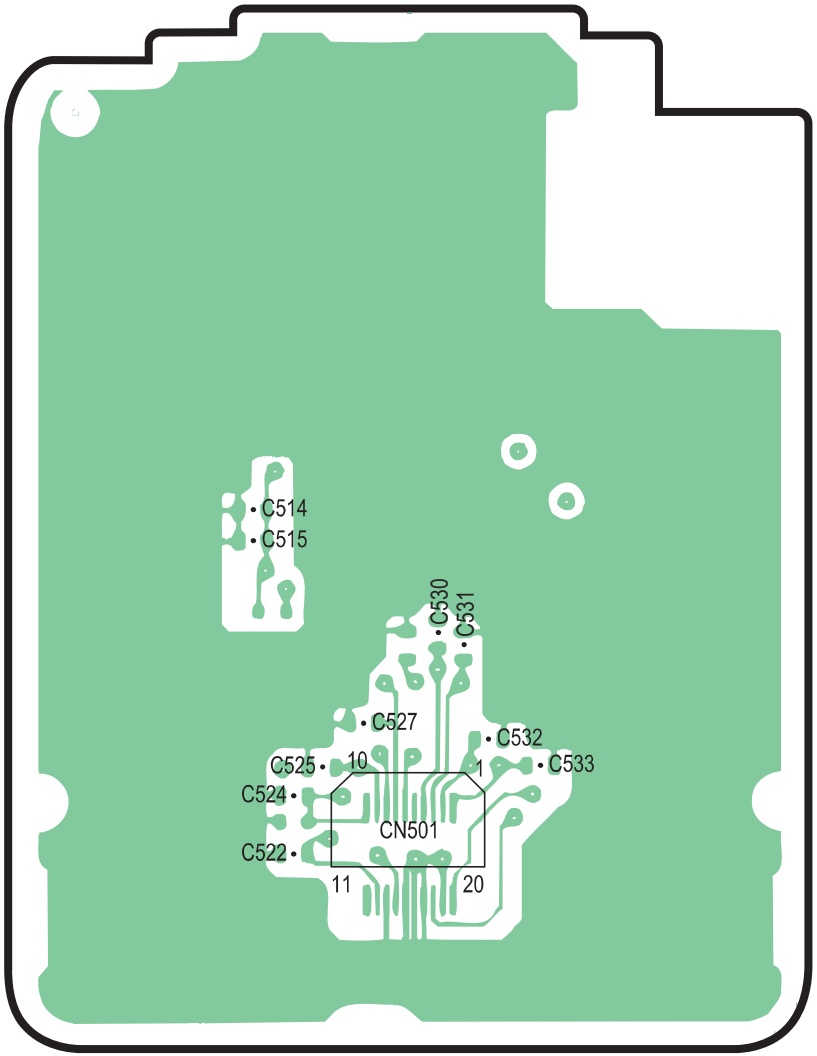
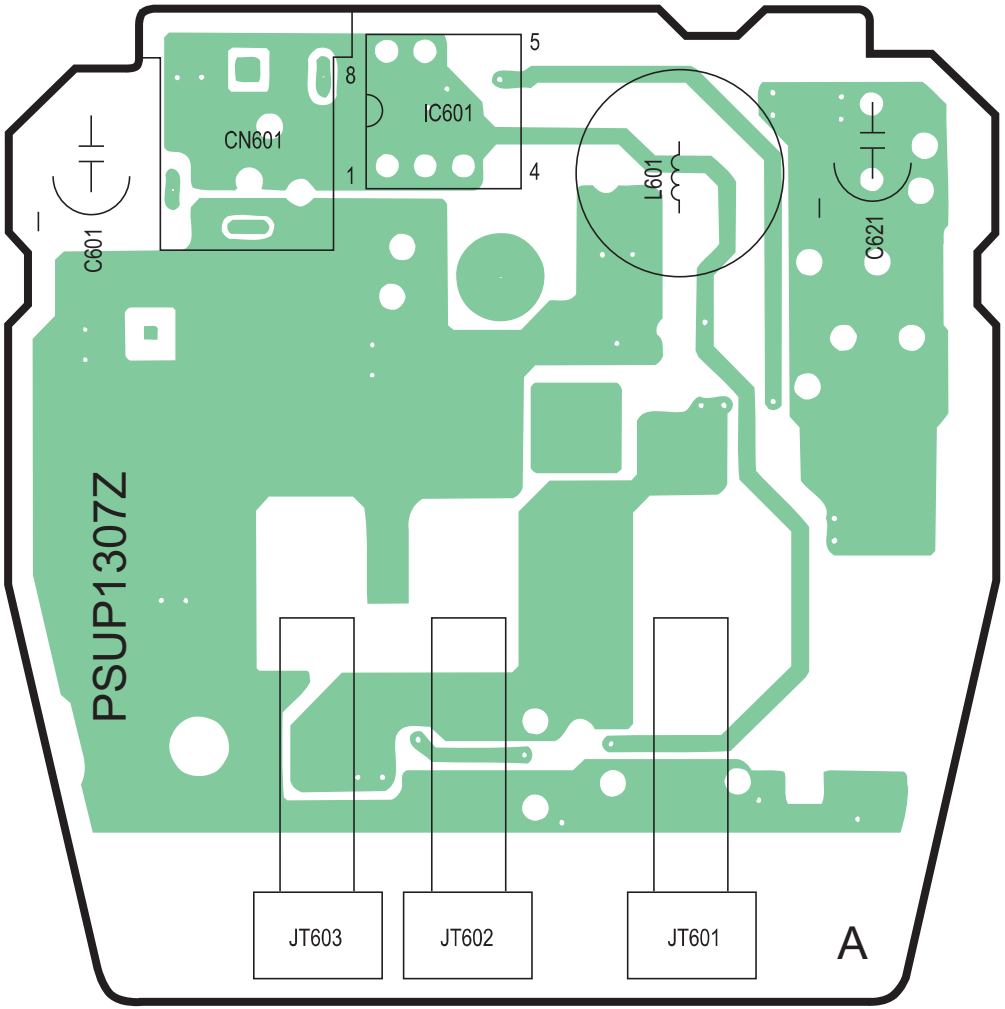


COMPONENT VIEW




BOTTOM VIEW